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Riggs Optical Company

AMERICAN JOURNAL OF OPHTHALMOLOGY

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DENDRITIC KERATITIS ASSOCIATED WITH CHRONIC MALARIA

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Dendritic keratitis, in association with the acute malarial attack, is well known and has been widely recognized as a manifestation of malaria. The time of occurrence from the malarial attack has been given as 1 to 20 days with the sixth day as an average.

It is the purpose of this paper to report the diagnosis of an otherwise unsuspected malaria from the recognition of a dendritic keratitis. The association of these conditions is certainly not new, but we have been intrigued by the high percentage of positive malarial smears which have resulted from repeated trials when, otherwise, the etiologic agent for this form of keratitis might have been less easily uncovered. In other words, the usual situation has been reversed inasmuch as malaria was diagnosed on the basis of a dendritic keratitis.

In the past 1½ years, 11 cases of dendritic keratitis were admitted to the Eye Service of Gorgas Hospital in which a painful eye was the sole complaint. In eight cases malaria was discovered from two to nine days following admission for the eye complaint. In no case was malaria even suspected by the admitting officer since the temperatures were never more than 99°F. This statement becomes particularly significant inasmuch as the index of suspicion of malaria at this institution is unusually high. Malaria, both tertian and estivo-autumnal, is one of the more common conditions seen by the Medical Service.

For those who have worked with a large number of malarial patients, it will be realized that the symptomatology of this disease may be nearly as protean in its manifestations as is syphilis. Dendritic keratitis apparently represents another unusual manner in which the disease malaria may be introduced to us.

For the purpose of this paper we are excluding all cases of this form of keratitis which occurred in conjunction with the acute malarial attack. As a complication of the acute attack it usually appears during the first week or even up to the third week following the initial symptoms of malaria.

In seven cases there was a definite history of a previous attack of malaria as far back as a year or more. In not one of these cases was malaria considered as a diagnosis on admission. Careful study of thick and thin blood smears over a period of several days in most instances was necessary before a positive identification of the plasmodium was possible. In two instances even the ordinary smears failed to show the organisms, so that it was necessary to resort to a method to "coax out" the plasmodium into the peripheral blood. As a provocative in the diagnosis of malaria, adrenalin and nicotinic acid were used. Two hundred milligrams of nicotinic acid is given and fol-

lowed in 30 minutes by 3 minims of adrenalin.* Routine thick and thin smears are taken at the time of the adrenalin injection and then at 60 and 120 minutes after the injection. It has been found that this method is sometimes effective in demonstrating malaria in the blood smear when the ordinary methods fail.

Of the eight cases seen, two proved to be estivo-autumnal, another was tertian and estivo-autumnal mixed, and the remaining five were tertian. That these were not cases of acute attacks of malaria is evidenced by the fact that all of the patients were asymptomatic and either afebrile or registered a temperature no higher than 99°F. during the hospitalization period.

Four of the eight patients had had recurrent attacks of dendritic keratitis three to six months previous to being seen at Gorgas Eye Clinic.

The seasonal incidence of these cases is perhaps less illuminating. Five cases occurred from September to March, which covers the worst part of the wet season as well as three months of the dry season. Three of the cases occurred in June and July. However, since these are admittedly chronic cases, the time of occurrence of the keratitis is probably of little significance.

In the three cases of dendritic keratitis in which malaria was not found, either the teeth or tonsils were suspected of being foci and promptly eliminated. One patient left the Hospital in three days, so that sufficient time could not be devoted to examining his blood smears.

It will be noted that six out of the eight cases were reported as showing the tertian form of the parasite. The relapsing nature of tertian seems to favor the development of a chronic malaria, hence probably accounts for the high number of keratitides in this particular series.

In addition to the intensive treatment of the malaria and the elimination of foci, our patients received topical applications of iodine syrup (Tr. iodine, glycerine, sat. sol. potassium iodide, and iodine crystals) together with topical atropine and a bandage to the affected eye. In several of the cases which seemed resistant to this form of treatment, vitamin A in the form of carotene and diathermy was added. The time for healing of the keratitis ranged from one week to two months, the average time being four weeks.

No permanent complications were noted except a moderate visual loss when the healed keratitis occurred in the pupillary center of the cornea.

There have been no recurrences of the keratitis in any of the treated patients to date.

No other type of keratitis has been seen in association with malaria either of the acute or chronic form. However, one case of dendritic keratitis was so refractory to treatment that it appeared to develop into a localized deep form of keratitis, but eventually healed.

A transference of the keratitis from the scrapings of a herpetic cornea to a healthy cornea was unsuccessful in two cases.

It is logical to assume, then, that had not the malaria been diagnosed and treated, the corneal lesions would have continued unabated. This fact was brought to light by several patients who had recurrent attacks of dendritic keratitis with a chronic asymptomatic malaria. In cases 2 and 3 and in two other cases not mentioned the patients gave a history of what seemed to be recurrent attacks of dendritic keratitis which cleared up only after the latent malaria had been eliminated.

* Smear routine as outlined by Maj. R. H. Ralston (MC), Medical Service, Gorgas Hospital.

The cases of dendritic keratitis seen at Gorgas Hospital emphasize the need for a thorough search of the blood smear for malaria on repeated occasions.

The fact that latent or chronic malaria may be completely asymptomatic makes the diagnosis even more challenging. It is to be remembered that malaria will be lurking in the blood of great numbers of our returning forces and the ophthalmologist may very well be the first to suspect its presence with the recognition of this peculiar form of keratitis.

Case reports

Case 1. A continental soldier, aged 29 years, was admitted to Gorgas Hospital on March 29, 1943, complaining of pain, lacrimation, and photophobia of the right eye for two weeks. He had been at another Army hospital for the last two weeks with the same complaint. He had been in the tropics for one year and there was a history of malaria, seven months previously, which was treated with quinine. His temperature on admission was 99°F. and remained normal throughout the remainder of his four weeks' period of hospitalization. There was no history of chills or fever nor any other systemic complaint save that referring to the eye. Daily thick and thin smears were examined beginning on March 29th, and on March 30th a positive smear for tertian malaria was reported. The patient was placed on atabrin on this date and his smears continued to be negative thereafter. The cornea of the right eye was treated with topical applications of iodine, atropine, heat, and bandaging. The eye began feeling better in a few days, and the keratitis appeared not to advance, although the lesion did not completely heal for one month.

A case of afebrile, chronic, tertian malaria associated with dendritic keratitis was unsuspected on admission at two large hospitals.

Case 2. A Puerto Rican soldier, aged 32 years, who had been in the tropics all his life was admitted to Gorgas Hospital on January 5, 1944. The chief complaint was pain, lacrimation, photophobia, and visual loss in the right eye of several months' standing. Because the eye trouble had been intermittent, he had not troubled himself to report earlier to his medical officer. The patient denied ever having had malaria, and, on admission, was afebrile. There was no history of chills or fever and he felt perfectly well except for his right eye, which showed a typical dendritic keratitis. Thick and thin blood smears were studied, but it was only after a nicotinic and adrenalin series of smears that a positive diagnosis of estivo-autumnal malaria could be made. The cornea of the right eye was treated with topical applications of iodine, atropine, and bandaging. The estivo-autumnal malaria apparently responded to atabrin, since daily blood smears continued to be negative for two weeks after treatment. A follow-up nicotinic acid and adrenalin series of smears failed to show any sign of parasites. The eye was well within the first week of treatment. The vision was 20/20 O.U., on discharge.

This apparently represents a case of dendritic keratitis in a chronic estivo-autumnal malaria or malignant tertian. The fact that malaria was denied by the patient is not surprising, since asymptomatic chronic malaria is not uncommon in the tropics.

Case 3. A continental soldier, aged 23 years, had been in the tropics for over two years and was admitted to Gorgas Hospital on December 18, 1943. His chief complaints were pain, lacrimation, and swelling of the lids of the right eye inter-

mittently for 1½ years. His eye symptoms usually lasted two or three days and then subsided spontaneously. These attacks occurred about every two or three weeks but had been increasing in frequency just before admission. There was a history of malaria with treatment in June, 1942. His eye trouble began soon after this attack, but he was not seen by an ophthalmologist until February, 1943, at which time a dendritic keratitis of the right eye was noted. It apparently subsided quickly, for he was not seen again until the present admission in December, 1943. A characteristic area of dendritic keratitis was seen at the 9-o'clock position near the limbus. During the first five days in the Hospital the temperature was normal, and the patient had no complaints aside from the eye. Thick and thin smears disclosed tertian malaria on the third day following an adrenalin series of smears. Only after atabrin therapy was begun did the temperature go as high as 99°F. The cornea of the right eye quickly healed following three topical applications of iodine and the usual supportive treatment of atropine and bandaging. The vision was 20/20 O.U., on discharge. There was no further recurrence of the keratitis.

This case illustrates a recurrent keratitis with afebrile chronic tertian malaria.

Summary

1. Dendritic keratitis may be associated with chronic or latent asymptomatic malaria.

2. The diagnosis of malaria may require repeated blood smears or special technique to prove the presence of the plasmodium.

3. Treatment of the malaria when present is of paramount importance for the treatment of the keratitis.

4. The returning forces will bring a considerable amount of chronic malaria with them. Dendritic keratitis may serve as a diagnostic aid when this association is kept in mind.

Gorgas Hospital.

Reference

[1] Maxwell, E. M. Quoted by Elliot in "Tropical ophthalmology." London, 1920, p. 452.

A COMPARATIVE STUDY OF THE BACTERIOLOGIC FLORA OF NASAL AND NASOPHARYNGEAL MEMBRANES OF PATIENTS WITH CERTAIN OCULAR DISORDERS*

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For many years we have studied the role of focal infection as an etiologic agent in certain ocular diseases, especially those of the inflammatory type. Our interest has been focused particularly upon the upper respiratory tract because it has long been recognized as a portal of entry through which infection may gain access to and affect other parts of the body, either by secondary infection or by the liberation and transmission of toxins from the primary focus. Therefore, in ocular disorders in which the etiology is obscure or suggestive of focal infection, the nasal and nasopharyngeal membranes are ordinarily investigated in our search for possible foci. Such an investigation includes not only clinical examination by a rhinologist but also bacteriologic studies and roentgen rays, although the latter are of themselves usually inadequate for the determination of pathologic changes in the sinuses..

A recent investigation,[1] dealing with the comparative bacteriology of the nasal and external ocular membranes in certain extraocular diseases, showed a marked bacteriologic similarity of the nasal and ocular flora in 50 percent of the cases studied. The present study was undertaken to determine whether or not there exists a comparable similarity between the nasal and nasopharyngeal flora, or whether cultures from more than one site may be necessary for a complete bacteriologic picture of the upper respiratory tract. The report is based on the findings in 277 sets of cultures taken separately from the nasal and nasopharyngeal membranes of 228 patients in whom upper-respiratory infection was suspected as one of the possible causes of an associated ocular disorder.

PRELIMINARY OBSERVATIONS

In studying the bacteriology of the upper respiratory tract we were, for some time, under the general impression that any pathogens harbored in this region would be revealed by cultures from the nasopharynx. According to Van Alyea,[2] "the naso-pharynx is a great collecting place for germs of all kinds and from all places . . . they may arrive there from any sinus either side of the nose, from the pharynx (tonsils, adenoids, pharyngeal bursas, etc.) and may be coughed up from the larynx." He further points out that "exudates from all the sinuses accumulate in the naso-pharynx, being carried there by the muco-ciliary stream." Proetz[3] also emphasizes this point, stating that "it has been well established that all such streaming from both the anterior and posterior series of sinuses is backward to the pharynx." With these facts in mind it seemed logical to assume that nasopharyngeal cultures were all that were necessary to obtain a bacteriologic picture of the upper respiratory tract. This assumption was further supported by the theory of direct extension of infection as outlined by MacKenty,[4] who stated that "sinusitis is never strictly confined to a single sinus. At least, to some degree, all the sinuses on

* From the Department of Research in Ophthalmology, Columbia University and New York Eye and Ear Infirmary. Research aided by a grant from the Snyder Ophthalmic Foundation. Preparation of manuscript aided by a grant from the Ophthalmological Foundation, Inc.

the same side are affected." Moreover, he believed that sinusitis was seldom limited even to one side, for the infection soon spreads from the original focus to all the sinuses. On this basis one would naturally expect that the same pathogen or pathogens would be the causative factor in all the sinuses involved, and that, since most of the sinuses would be more or less infected, at least some of these pathogens would reach the nasopharynx.

However, certain discrepancies in these theories eventually became apparent. During a previously mentioned study,[1] dealing with the comparative bacteriology of nasal and ocular membranes, cultures from the nasopharynx were often included for reasons not associated with the research project. It was noted that in a number of instances the nasal cultures revealed the presence of pathogens not found in the nasopharyngeal cultures. This was particularly so in the case of toxigenic staphylococci, which were often found in the nasal cultures only. Other investigators made similar observations, among them Jacobson and Dick,[5] who concluded that examination of the *nasal* bacteria was the easiest method of determining the causative agent of infections of the ear and *upper respiratory tract.* These findings led to further considerations. For some time we had been puzzled by marked differences in the results obtained from autovaccine therapy. Some patients responded remarkably well to vaccines prepared from their nasopharyngeal pathogens, whereas others showed little or no improvement. Obviously there were a number of possible reasons for these failures, but it occurred to us that one of them might be the employment of an unsuitable vaccine. If the pathogens recovered from the nasopharyngeal culture did not include the etiologic agent of an associated ocular disorder, it followed that desensitization to these organisms would not bring about the desired results. With this in mind, several patients who had failed to respond to nasopharyngeal vaccines, and whose nasal cultures revealed pathogens of a different type, were given vaccines prepared from the latter. In some instances a gratifying improvement was noted after instituting therapy with the nasal vaccine, in marked contrast to the poor response elicited by the nasopharyngeal vaccine.

These observations and results were difficult to reconcile with the opinions generally held as well as with our own former impressions. In seeking an explanation we speculated as to the possibility (1) of an interruption in the normal mucociliary flow due to the effect of toxins or other factors on the sinus membranes. Schillinger,[6] in discussing this subject, mentions the important role which infections, especially of the chronic type, may play in the injury or destruction of ciliary action. He states that "when a (sinus) membrane is diseased, it slows up in its work or stops functioning, and symptoms develop." Thus there is the possibility of a sinus being walled off by an area of nonvital membrane in which the cilia are either nonactive or missing. It would seem that such a condition would surely retard or prevent the normal flow, and that under such circumstances the discharge from infected anterior sinuses might readily fail to reach the nasopharynx at all. (2) Another factor to be considered is the existence of anatomic anomalies, such as a deflected septum or multiple polypi, which might act as mechanical barriers to the normal mucociliary current. Here again one might conceivably fail to isolate the causative agent of an anterior sinusitis from a nasopharyngeal culture.

A survey was made to ascertain whether or not a single set of nasal and nasopharyngeal cultures could be relied

upon to reveal the organisms ordinarily harbored by the individual in these areas. It was found that, in most instances, repeated cultures gave substantially the same results as the original ones. In a number of cases the bacteriologic picture of the nose and throat has remained the same over a period of years. For example, in one case, five sets of cultures taken over a period of five years, consistently revealed many coliform bacteria in both sides of the nose whereas nasopharyngeal cultures showed no coliform bacteria except in one instance when there were only a few present. Similarly, in another case, in which eight sets of cultures were taken over a period of five years, at no time did the nasal cultures reveal coliform bacteria, although they were present in every instance in the nasopharyngeal cultures. Naturally, in those instances in which local treatment or vaccine therapy was successfully employed, symptomatic improvement was frequently associated with a decrease in number, attenuation of toxigenicity, or even complete elimination of the pathogens originally found. Two typical cases will serve to illustrate such a process. (1) Mr. E. L., in 1937, showed toxigenic staphylococci, toxigenic streptococci, and E. coli in his nasopharyngeal culture and toxigenic staphylococci in his nasal culture. He was placed on minute doses of autogenous vaccine and responded remarkably well, in so far as his clinical symptoms were concerned. In 1939, his nasopharyngeal culture showed no coli, but the toxigenic staphylococci and streptococci were still present, as were the toxigenic staphylococci in his nose. He continued on vaccine therapy until 1941, when nasal cultures showed only nontoxigenic staphylococci and nasopharyngeal cultures showed only nontoxigenic streptococci and staphylococci. (2) Mr. F. B. G., in 1936, showed B. friedländer in his nasopharynx, the only significant finding. This organism produced a +++ iritis and very toxic symptoms when injected intravenously (0.3 c.c. of an 18-hour culture) into rabbits. Two months later the cultural findings were the same, as was the effect on rabbits. In 1937, the B. friedländer was still present but was not so toxic for rabbits as it had been, and in 1939, its effect on rabbits was practically nil. Some months later the organism resembled a typical E. coli rather than a B. friedländer, and again it was relatively nontoxic for rabbits. In 1940, there were no coliform bacteria present, and from then until 1942, when he was last seen, cultures were repeated at intervals of three to six months but showed no coliform bacteria at any time. These cases serve to demonstrate the uniformity of cultural findings as well as the possibility of eliminating pathogens by immuno-therapy. Fortunately the process is not always so slow as in the cases just cited, and usually clinical improvement is noted in such cases long before the pathogen is finally eliminated.

Examination of hundreds of bacteriologic records of patients on whom a number of repeated cultures had been taken at various intervals confirmed our impression that a single set of nasal and nasopharyngeal cultures gave results which were sufficiently accurate to make the findings a reliable index of the individual's ordinary nasal and nasopharyngeal flora and that such findings are not usually a matter of chance, subject to circumstances existing at the time of culture.

Outline of procedure

Nasal cultures were obtained by inserting dry sterile swabs in front of the middle turbinates and then along the lower turbinate and septum as far posteriorly as possible without first shrinking the nasal membranes. Postnasal cultures were obtained by similarly swabbing the naso-

pharyngeal region and also obtaining a portion of such postnasal discharge as might be present. Previous experiments (unpublished data) had shown this to be the preferable method of obtaining cultures because more pathogens were usually recovered in this way than by the use of a West swab or by nasal lavage. It is possible that the dry swab picks up organisms firmly imbedded in the mucous membrane which would otherwise not be dislodged; we have found that the use of swabs moistened with broth for easier passage are not nearly so satisfactory for the recovery of pathogens.

The present report represents data compiled from these bacteriologic studies of 228 patients in whom chronic upper-respiratory disease was one of the suspected causes of an associated ocular disorder. A total of 277 bacteriologic studies was made, specimens from a number of these patients having been cultured on one or more occasions.

Of the various organisms recovered, the principal pathogens were toxigenic staphylococci, streptococci, and members of the coliform group. Pneumococci were included in the streptococcal group, as suggested by Topley and Wilson,[7] and, since we were primarily interested in determining the pathogenicity of the individual strains, type identification was usually omitted. The hemolytic streptococci found in this series were not classified, but since none of the patients from whom they were isolated showed clinical symptoms of acute streptococcal infection, such as is usually associated with the Lancefield group A streptococcus, such classification was not considered essential. However, in view of the existence of possible carriers, it is planned that future studies will include serologic tests for classification of such hemolytic streptococci as may be isolated. Neisseria catarrhalis, diphtheroids, Bacillus subtilis, and Haemophilis influenzae were also seen, but because these organisms have not been established as etiologic agents in chronic disease, the discussion is limited to those previously mentioned.

Methods of indicating probable pathogenicity

Staphylococci. In vitro tests used to indicate pathogenicity of staphylococci have been discussed elsewhere.[8-16] The tests used for this study were confined to determination of chromogenesis, hemolysin production, mannitol fermentation, and coagulation of citrated rabbit-blood plasma. Coagulase-positive strains were considered pathogenic regardless of their reaction to the other *in vitro* tests because the coagulase test is now recognized as a reliable substitute for animal inoculation tests.

Streptococci. Hare,[17] Heist,[18] Todd,[19] Solis-Cohen,[20] and others have shown that resistance of beta hemolytic streptococci to the bactericidal power of fresh blood is parallel with certain pathogenic properties. Chapman[21, 22] and his coworkers have shown that the ability of both hemolytic and nonhemolytic types of streptococci (not including enterococci) to resist the bactericidal power of fresh blood corresponds to a high degree with their toxicity for laboratory animals. *In vitro tests,* based on this principle, have been proposed by Chapman as reliable indicators of probable pathogenicity, and were used in the present study. Over the period of years in which we have employed these tests, we have found them to be of great value in confirming the suspicion of disease, the presence of resistant streptococci often being associated with suggestive clinical symptoms. An exception is made in certain instances in which the mere presence of streptococci,

regardless of their *in vitro* reaction, is suggestive of disease. This appears to be the result of lowered resistance of the membranes rather than of the toxicity or virulence of the organism. One example is the presence of any type of streptococcus in the nares, a finding which our observations have led us to consider pathologically significant. In this regard the observations of Jacobson and Dick[5] conform with ours.

Coliform bacteria. The significance of coliform bacteria in the human upper respiratory tract has been reported,[23, 24] and the contrast in pathogenicity between these and human fecal strains has been shown. Our experiments indicate that these upper-respiratory coliform strains, most of which are highly toxic for rabbits, both ocularly and systemically, are also pathogenic for those patients from whom they were isolated. Clinical symptoms in these patients appear on the whole to be more severe than are those in patients with chronic upper-respiratory infection caused by other organisms.

Bacteriologic findings in 277 sets of nasal and nasopharyngeal cultures

Tables 1, 2, and 3 show the incidence of staphylococci, streptococci, and coliform bacteria, respectively, in the 277 sets of nasal and nasopharyngeal cultures.

Staphylococci. Toxic staphylococci were found in the nasal or nasopharyngeal membranes in 186 of the 277 sets of cultures (table 1). Although toxic staphylococci were present in both nasal and nasopharyngeal cultures in 79 instances (28.5 percent), in 79 other instances (28.5 percent) they were present in the nasal membranes only, whereas in 28 (10.1 percent) sets of the cultures they were present in the nasopharynx only. This illustrates the importance of taking both nasal and nasopharyngeal cultures.

TABLE 1

Incidence of toxigenic staphylococci in 277 sets of nasal and nasopharyngeal cultures

Nasal Culture	Nasopharyngeal Culture	No.	Percentage
+	+	79	28.5
+	0	79	28.5
0	+	28	10.1
0	0	91	32.9
	Total	277	100

+ Toxigenic Staphylococci; 0 Nontoxigenic or no Staphylococci.

Streptococci. For determining the presence of toxigenic streptococci in the upper respiratory tract, the nasopharynx is apparently the site of choice from which to obtain culture material. Only very

TABLE 2

Incidence of streptococci in 277 sets of nasal and nasopharyngeal cultures

Nasal Culture	Nasopharyngeal Culture	No.	Percentage
−	+	198	71.5
+	+	25	9.0
0*	+	10	3.6
0*	0	7	2.5
+	0	1	.4
−	0	20	7.2
−	−	16	5.8
	Total	277	100

+ Toxigenic Streptococci; 0 Non-toxigenic Streptococci; − No Streptococci.

* The presence of streptococci in the nasal membranes is considered a pathologic finding regardless of the toxigenicity of the organism.

TABLE 3

Incidence of coliform bacteria in 277 sets of nasal and nasopharyngeal cultures

Nasal Culture	Nasopharyngeal Culture	No.	Percentage
+	−	24	8.7
−	+	25	9.0
+	+	16	5.8
−	−	212	76.5
	Total	277	100

+ Present; − Absent.

rarely does one recover toxigenic streptococci from the nose without finding similar strains in the corresponding nasopharynx. In the present series there was only one such instance (table 2). In the majority of the cultural studies, toxigenic streptococci were found in the nasopharynx only. In only 25 instances (9 percent) were toxigenic streptococci recovered from both nasal and nasopharyngeal cultures. In 10 other instances (3.6 percent) the recovery of nontoxigenic streptococci from nasal cultures was at least suggestive of pathologic alteration, since the presence of nasal streptococci *per se* is considered abnormal. If we are correct in assuming that any streptococcal infection of the nasal membranes had its inception in the nasopharyngeal region, it would follow that the presence of streptococci in the nose is indicative of a more extensive involvement than is the case when they are recovered from the nasopharynx alone. Such a finding may be an indication as to the extent of infection. In any case, it seems generally agreed that streptococci *per se* are not present in the normal healthy nasal membrane.

Coliform bacteria. Although the total incidence of coliform bacteria in this series of cultures (table 3), as indicated by both nasal and nasopharyngeal cultures, was 23.5 percent (65 instances), the organisms were present in both cultures in only 5.8 percent (16 instances). In 8.7 percent (24 instances) they were present in the nasal membranes only, and in 9.0 percent (25 instances) in the nasopharynx only, again demonstrating the importance of culturing specimens from both sites.

TABLE 4

DISTRIBUTION OF PATHOGENS IN 110 SETS OF NASAL AND NASOPHARYNGEAL CULTURES IN WHICH ONE OR MORE PATHOGENS WERE SHARED BY THE TWO FOCI

Distribution of pathogens	Example		No.
	Nose	Nasopharynx	
One shared pathogen, additional unrelated pathogen or pathogens in nasopharynx†	Toxigenic Staph. — —	Toxigenic Staph. Coliform bacteria Toxigenic Strep.	66
One shared pathogen, additional unrelated pathogen or pathogens in nasal membranes*	Toxigenic Strep. Toxigenic Staph.	Toxigenic Strep. —	6
One shared pathogen, additional unrelated pathogens in both foci*†	Coliform bacteria Toxigenic Staph.	Coliform bacteria Toxigenic Strep.	8
One shared pathogen, no additional pathogens in either focus	Toxigenic Strep.	Toxigenic Strep.	20
Two shared pathogens, no additional pathogens in either focus	Toxigenic Staph. Toxigenic Strep.	Toxigenic Staph. Toxigenic Strep.	8
Two shared pathogens, additional pathogen in nasopharynx†	Escherichia coli Toxigenic Staph. —	Escherichia coli Toxigenic Staph. Toxigenic Strep.	2
Total			110

* Instances in which nasopharyngeal cultures alone did not reveal all the pathogens present in the upper respiratory tract.

† Instances in which nasal cultures alone did not reveal all the pathogens present in the upper respiratory tract.

INCIDENCE OF PATHOGENS

Analyzing the bacteriologic findings in regard to the presence of probable pathogens, irrespective of the type of organism involved, we note the following results (table 4): (1) In 110 sets of cultures (39.7 percent), the nasal cultures showed one or more pathogens and the corres-

TABLE 5

COMPARATIVE BACTERIOLOGY OF 277 SETS OF NASAL AND NASOPHARYNGEAL CULTURES

	No.	Percentage
Pathogens in nasal membranes unrelated to pathogens in nasopharynx*†	71	25.6
Pathogens in nasopharynx, none in nasal membranes†	77	27.8
Similar pathogens (one or more) in nasal and nasopharyngeal membranes (see table 4)	110	39.7
Pathogens in nasal membranes, none in nasopharynx*	12	4.4
No pathogens in either nasal or nasopharyngeal membranes	7	2.5
Total	277	100

* Instances in which nasopharyngeal cultures alone did not reveal all the pathogens present in the upper respiratory tract.

† Instances in which nasal cultures alone did not reveal all the pathogens present in the upper respiratory tract.

ponding nasopharyngeal cultures showed one or more of the same pathogens. In 82 of these 110 sets of cultures there were other pathogens, either in the nose or nasopharynx or both, in addition to those shared by both foci. (2) Of the 277 sets (table 5) of cultures, 71 (25.6 percent) showed nasal pathogens of a genus different from those found in the nasopharynx. (3) In 77 sets of cultures (27.8 percent), one or more pathogens were present in the nasopharynx, but the corresponding nasal cultures yielded no pathogens. Included in this number, however, were seven nasal cultures in which the presence of nontoxigenic streptococci should probably be considered a pathologic finding. (4) There were 12 instances (4.4 percent) in which nasal cultures showed the presence of pathogens whereas the corresponding nasopharyngeal cultures showed none. (5) No pathogens were found in either nasal or nasopharyngeal cultures in seven instances (2.5 percent).

A summary of these results (table 6) shows that nasopharyngeal cultures alone would have failed to reveal the presence of other pathogens in the upper respiratory tract in 97 instances (35 percent), whereas nasal cultures alone would have failed to do so in 224 instances (80.9 percent). In 242 instances (87.4 percent), cultures from both nasal and nasopharyngeal membranes yielded more pathogens than would have been obtained from only one of these sites. The bacteriologic picture was similar in both cultures in only 35 instances (12.6 percent).

ADDENDA

These results demonstrate the necessity

TABLE 6

COMPARATIVE INCIDENCE OF PATHOGENS (IRRESPECTIVE OF TYPE) IN 277 SETS OF NASAL AND NASO-PHARYNGEAL CULTURES

	No.	Percentage
Instances in which nasal cultures revealed pathogens not found in nasopharyngeal cultures	97	35.0
Instances in which nasopharyngeal cultures revealed pathogens not revealed by nasal cultures	224	80.9
Instances in which cultures from both nasal and nasopharyngeal membranes revealed more pathogens than would have been revealed by either alone	242	87.4
Instances in which both nasal and nasopharyngeal cultures yielded identical bacteriologic findings	35	12.6

for culturing more than one locus when searching for pathogens in the upper respiratory tract. They also suggest the advisability of culturing each suspicious focus separately and directly, and not relying on drainage areas to reveal the etiologic organisms. As the first step in this direction, we proceeded to take separate cultures from each side of the nose, which led to the observation that there may frequently be a marked difference between the bacteriologic flora of the right and left nasal membranes. In a number of cases the pathogens on one side were totally unrelated to those found on the opposite side. In many instances one side yielded only nonpathogens whereas the other side yielded one or more highly toxigenic organisms. Usually, in these cases, the clinical nasal symptoms were more marked or were even limited to the side from which the pathogens were isolated. The study of the bacteriologic content of the nasal cavities, undertaken primarily to establish the possible relationship to associated ocular involvement, revealed in many instances a unilateral ocular involvement on the same side as a unilateral nasal infection.

We have recently instigated the practice of having cultures taken directly from any suspicious nasal accessory sinus whenever possible. Such cultures are, of course, taken by a rhinologist. In several instances sinus cultures have yielded pure growths of pathogenic organisms of an entirely different type from those found in either nasal or nasopharyngeal culture of the same patient.

Summary

Because focal infection appears to be an etiologic factor in many ocular disorders, improved methods of recognizing these possible foci have been sought. We have been particularly interested in the upper respiratory tract because of its role as a portal of entry for infection of both a primary and secondary nature. Its proximity to the ocular structures enhances the importance of this tract as a source of infection and our investigations include clinical and roentgen-ray examination as well as bacteriologic studies.

Concerning the latter, some investigators have assumed that nasal cultures alone were sufficient to reveal any pathogens present in the upper respiratory tract, whereas others were under the impression that nasopharyngeal cultures were more satisfactory for this purpose. However, clinical and bacteriologic observations led us to believe that both nasopharyngeal cultures and nasal cultures might be necessary for a complete bacteriologic picture. Although a previous investigation showed a marked bacteriologic similarity between the external ocular membranes and corresponding nasal membranes in 50 percent of the patients studied, there was no proof of the existence of a comparable bacteriologic similarity between nasal and nasopharyngeal membranes. Consequently, a comparative study of the bacteriologic flora of the nose and nasopharynx was indicated.

Two hundred seventy-seven cultural studies were made of the nasal and corresponding nasopharyngeal membranes of 228 patients. The most common pathogens found were toxigenic streptococci (including pneumococci), toxigenic staphylococci, and members of the coliform group. *In vitro* tests were used to determine the pathogenicity of streptococci and staphylococci. Previous studies had pointed out the pathologic significance of the presence of coliform bacteria in the upper respiratory tract and of streptococci (regardless of toxigenicity) in the nasal membranes.

Toxigenic staphylococci were present in the nasal cultures alone in 79 instances, in the nasopharyngeal cultures alone in

28 instances, and in both nasal and nasopharyngeal cultures in 79 instances.

Toxigenic streptococci were present in the nasopharynx alone in 198 instances, in the nose alone in one instance, and in both nasopharynx and nose in 25 instances. However, there were 17 instances in which there were nontoxigenic streptococci in the nasal cultures (a probable pathologic finding), of which the corresponding nasopharyngeal cultures showed toxigenic streptococci in 10 instances and nontoxigenic streptococci in seven instances.

Coliform bacteria were present in the nasal culture alone in 24 instances, in the nasopharyngeal culture alone in 25 instances, and in both cultures in 16 instances.

Comparison of the incidence of pathogens, irrespective of type, showed the following results: There were 71 instances in which the pathogens found in the nose were of an entirely different type from those found in the corresponding nasopharynx; in 77 instances only the nasopharyngeal culture yielded pathogens, whereas in 12 instances only the nasal culture yielded pathogens; there were 110 instances in which the nasal cultures showed one or more pathogens whereas the corresponding nasopharyngeal culture showed one or more of the same pathogens. However, 82 of these had other pathogens, either in the nose or nasopharynx or both, in addition to those already shared by both foci. In seven instances, there were no pathogens in either nose or nasopharynx.

Thus, nasopharyngeal cultures alone would have failed to reveal the presence of pathogens or additional pathogens in the upper respiratory tract in 97 instances, whereas nasal cultures alone would have failed to do so in 224 instances. In 242 of the 277 sets of cultures, more pathogens were recovered by employing both nasal and nasopharyngeal cultures than would have been obtained by culturing one site or the other. In only 35 instances was the bacteriologic picture identical in both cultures.

Conclusions

The bacteriologic studies described show that, in most instances, cultures from both nasal and nasopharyngeal membranes are a far more reliable index of the presence of possible etiologic pathogens than are cultures from either site alone. Preliminary investigation suggests the necessity of culturing more than these two sites in order to obtain a satisfactory bacteriologic picture of the upper respiratory tract.

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ALLERGIC RETINOSIS*

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Several cases of allergic reactions of the retina have been reported in the literature, but the association of allergy as the etiologic factor is indefinite in many. After a consideration of pertinent facts, a case of retinal allergy in which the etiologic factor is not indefinite will be presented.

Certain tissues respond to allergins with greater frequency and intensity than do others. Bedell[1] states that these "shock" tissues are the skin, conjunctiva, and retina. Since the bacterial infection may produce definite hypersensitivity of the ocular tissues, and since it is possible that many ocular inflammations may be allergic reactions, we should carefully consider instances of definite clinical allergy in the retina.

SUMMARY OF EXPERIMENTAL EVIDENCE

It has been amply demonstrated by experimental methods that the eye is capable of allergic response Nicolle and Abt[2] first revealed the possibility of allergic reactions within the eye by sensitizing animals to serum by intraperitoneal injection. Subsequent intraocular injection of the serum produced a violent local inflammation.

Sattler[3] found that only a slight reaction followed a preliminary injection into the eye, whereas reinjection at a later date produced a peculiarly violent response.

Other work by Krusius, Kummel, Dold and Rados, Szily, Fuchs, and Miller proved that the tissues of the eye can be readily sensitized either locally or as part of a general sensitization, and that these tissues are capable of violent allergic responses.

Seegal and Seegal[4] showed that occasionally the sensitized eyes of rabbits could be made to flare up by the introduction of the antigen by the gastrointestinal route, and that desensitization could be achieved by repeated intravenous injections of the antigen.

The retina itself has antigenic properties and produces lytic and agglutinating antibodies.[5] Woods[6] sensitized dogs by intraperitoneal injection and then perfused the eye with the antigen. Numerous small hemorrhages developed in the retina. It was apparent that the blood diffused out of the vessels, that actual breaks in the vessels did not occur.

SUMMARY OF CLINICAL REPORTS

The association of allergy and the retinal reaction is too often obscure in many of the reported cases of allergic reactions in the retina. This difficulty seems to have occurred in part because the allergen was not known, in part because the patient would not submit to a critical test, or because all methods of demonstrating the association were not used, in part because the association with allergy was only a clinical suspicion, and because the opportunity for pathologic study does not occur.

The types of visible retinal responses to allergy are:

1. Intense edema. Bedell[1] noted retinal edema following injection of serum in a sensitive patient and observed that it was associated with a widespread urticarial reaction. Lemoine[7] states that he has frequently observed diffuse edema of the retina extending three or four disc-

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diameters around the optic nerve head and involving the macula. He first considered these cases to be allergic but later noted the condition in patients in whom it was not possible to demonstrate an allergy. No case reports were included in this report. Plumer[8] presented a case of recurrent edema of the macula in an allergic patient who had eaten peanuts before each attack. Unfortunately, the patient would not consent to eating peanuts as a direct test. Horniker[9] reported 10 cases of macular edema with sudden onset. In a majority of these cases there was evidence of arterial spasticity, the occurrence of migrainelike phenomena, and a family history of vascular disease. Although Horniker was unable to reach a definite conclusion in respect to etiology, he did not believe that allergy was the cause. Duggan[10] reported six similar cases, believed the edema to be in the choroid, and found that they responded to vasodilators, as did Horniker.

2. Retinal hemorrhages. Retinal hemorrhages are the effect of increased permeability of the capillaries, and many superficial and deep hemorrhages may occur. The picture may even simulate occlusion of the central retinal vein.[11] However, allergic retinal hemorrhages characteristically vary rapidly in location and appearance. Bedell[12] reported two cases of retinal hemorrhages with fundus photographs. These were presumed to be due to allergy, but in at least one of these the evidence seemed inconclusive, as is so frequently the case with reports on retinal allergies.

3. Retinal detachment. Several cases of retinal detachment, presumably allergic, have been reported. Prewitt[13] presented a case of recurrent bilateral retinal detachments which came on concurrently with nodular swellings of the body. Balyeat[14] demonstrated a case of complete bilateral retinal detachment in an allergic patient 21 years of age. There was no evidence to support any other than a coincidental relationship between the retinal detachments and the allergy. Wiener[15] refers to a case of flat retinal detachment in a patient with chronic skin disease and sensitivity to trichophytosis in whom the loss of vision and advent of the skin disease were associated. Wiener states that there was a focal reaction in the retina in addition to the local reaction in the skin. Unfortunately, no details were reported.

4. Recurrent neuroretinitis. Ruedemann[16] cited such a case associated with pollen sensitivity. The question of brain tumor had been raised but the recurrences were found during the hay-fever season.

Anatomic considerations

In the case to be presented, the edema was visible only in the vicinity of the macula, as is shown in the accompanying illustration. This has been true of many of the other reports on allergic reactions as well as retinal edema from other causes. The ability of the macula to absorb fluid is due, in part, to the striking thickness of the internuclear layer of the retina in this region. It is also significant that the choroidal capillary network is especially well marked in this region and the lumen of these vessels is wider than elsewhere. The more peripheral parts of the retina may preserve their transparency even in circumstances which we know to be associated with a very high degree of edema; for example, in cases with occlusion of the central retinal vein.[17]

Discussion of the reported case

The case to be presented is of interest because allergy was more definitely the etiologic factor than in most of the other reported cases of retinal allergy.

In brief, the patient was a highly allergic individual who had had hay fever,

allergic rhinitis, and asthma during most of his life and allergic keratoconjunctivitis during the past two years. He was sensitive to numerous allergens and had a definite family history of allergy. His general physical condition was otherwise excellent. Edema of the macular region of one eye occurred with sudden onset and reduced the visual acuity from 20/50 to a dubious 20/200. The reduction in the visual acuity to 20/50 was due to keratitis. One-half hour after the administration of 1 c.c. of epinephrin hydrochloride the visual acuity again increased to 20/50. During the following hours the acuity again diminished but responded to the administration of epinephrin in oil over a period of several days, and the edema of the macula subsided.

Two days before the onset of the macular edema, X-ray therapy had been administered to the cornea of each eye, with the contact machine. This, however, must be regarded as purely coincidental, since the type of radiation given does not penetrate to the retina in sufficient quantities to be of any significance; the effect of this X-ray therapy does not become manifest for approximately two weeks; and the therapy was administered to both eyes whereas the macular edema occurred in only one.

The association of the macular edema and the allergy is as definite as most cases of this type can be. The individual was highly allergic and developed edema of the macula during a period of exacerbation of allergic manifestations in the conjunctiva, cornea, skin, and nose. The visual acuity responded dramatically to epinephrin therapy and the edema subsided more slowly with continued administration of epinephrin. It was, unfortunately, impossible to determine the specific allergen at fault, since the patient was highly sensitive to so many allergens. This precluded the possibility of the critical test—that of administering the allergen to determine whether or not a flare-up of the edema of the retina could be produced.

It is to be noted that Duggan's cases of choroidosis centralis serosa and Horniker's cases were presumably on a vascular basis and responded to vasodilators. The case presented is that of an allergic individual without demonstrable vascular abnormalities who responded dramatically to a vasconstrictor.

Case report

E. C., a white man, aged 42 years, entered September 12, 1944, complaining of having had inflamed eyes for two years—more severe recently.

Since the age of 15 years, the patient had had mild attacks of hay fever, rhinitis, and occasional asthma. These occurred only on the sea coast, but were without seasonal incidence.

The patient was examined by an allergist six months before entry and given numerous skin tests. He was found to be sensitive to 10 ingestants, 5 environmentals, 22 pollens, and dust from his house, pillows, and mattress. The process of desensitization was instituted with a mixture of pollens and dust. These were administered over a period of two months and some improvement in the ocular inflammation is said to have occurred. During the three weeks before entry the condition recurred. The patient had worked hard during the past year and had been generally fatigued.

The patient's mother and daughter both had asthma. The former was sensitive to pollens, the latter became asthmatic in association with colds.

During the past two years the patient's left eye had itched, burned, watered, and become red intermittently—more markedly so in the past three weeks. The same process had been present in the right eye

for the past five months. The patient had been examined by several ophthalmologists, and various preparations containing epinephrin and related compounds had been used, with temporary alleviation of symptoms. No precipitating cause of either the ocular or respiratory symptoms had been discovered. During these past two years the patient had spent almost one half of his time on the eastern seaboard and the remainder on the western seaboard without experiencing any appreciable difference in the process.

Eye examination. Vision: Each eye 20/50+ uncorrected; 20/25 corrected.

External examination of each eye disclosed that the skin of the lids was red and somewhat thickened. The palpebral and orbital conjunctivas were moderately red and several flecks of mucus floated about the fornices. Circumcorneal injection was present, and a slightly elevated nodular ridge extended around each limbus.

With the use of corneal microscope and slitlamp numerous tiny punctate staining areas on the surface of the cornea were noted after instillation of fluorescein. The corneal epithelium was cloudy, and a fine diffuse opacification was noted at the level of Bowman's membrane, more marked in the left eye.

The media were otherwise clear. Fundus examination was negative. The ocular rotations and tension were within normal limits. The nasolacrimal ducts were patent.

The following refractive error was noted: R.E. −0.50D. sph. ⌯ −1.50D. cyl. ax. 30°; L.E. −0.25D. sph. ⌯ −1.00D. cyl. ax. 105°.

The visual fields and blind spots were normal as tested with a 2-mm. white test object at one meter.

Culture. A few colonies of Staphylococcus aureus, coagulase positive, were grown from each eye.

Smears. That from the right eye revealed a few epithelial cells but no leukocytes. The smear from the left eye contained some polymorphonuclear neutrophiles and rare eosinophils.

Systemic examination. No abnormalities were noted except for an allergic rhinitis with a number of nasal polyps and a deviated septum.

Laboratory tests. Urine: negative.

Blood: sedimentation rate, 8 mm. hr.; leukocyte count, 6,100 per cu. mm. PME, 1 percent; blood smear, normal; hematocrit, 56; hemoglobin, 18.7 gm. per 100 c.c.; Wassermann, negative.

Stool: negative for occult blood and parasites and parasitic ova.

X-ray examination: Studies of sinuses, chest, and gastrointestinal tract were all negative.

Intracutaneous tests with numerous antigens elicited slight to moderate sensitivity.

Course. Patch tests with the various drugs that were to be used in ocular therapy were applied. The conjunctivas were treated with silver nitrate, and penicillin drops were prescribed. During this period of observation and treatment the edema and opacification of the cornea became progressively more marked and the vision had deteriorated to 20/100.

X-ray therapy, 500r. was administered to each cornea with a contact machine on September 30th. The details of this irradiation were HVL-3 mm. Al, ASD 5 cm., area 1.2 cm.

On October 2d, the patient complained that vision in the right eye had become definitely more blurred. Tests of the visual acuity showed it to be slightly less than 20/200 in the right eye, and no improvement could be obtained with any lens. The visual acuity in the left eye was 20/100.

The cornea of the right eye was temporarily cleared with glycerin drops. On ophthalmoscopic examination an area which appeared to be edematous was

noted temporally and below the optic disc. This area was white, slightly elevated, and the retinal vessels passed over it. The apparent edema was most marked below the fovea. The remainder of the fundus was normal and the entire fundus of the left eye was normal (see figure).

Fig. 1 (Bettman). Fundus in a case of allergic retinosis.

A test of the visual fields disclosed a relative depression superior to the fixation point in the right eye and a very slight depression of the superior temporal quadrant in the left eye. The peripheral visual fields were normal to a 5-mm. white object at one meter. No lesion corresponding to the field defect in the left eye could be seen ophthalmoscopically, but the haziness of the cornea prevented a satisfactory examination.

The visual acuity was rechecked and again found to be a dubious 20/200 in the right eye. One c.c. of 1:1,000 epinephrin hydrochloride was administered intramuscularly. In approximately one-half hour the visual acuity had improved to 20/50— in the same eye. On ophthalmoscopic examination it was believed that the area of edema was slightly lessened, but the change was not marked. Ophthalmoscopy was performed with some difficulty because of the cloudiness of the cornea.

The patient was placed on a low salt diet and daily injections of ice of epinephrin 1:1,000 in oil were administered. After one day of this treatment the visual acuity was 20/200+1 corrected. After

two days the visual acuity had improved to 20/50 uncorrected and 20/40+ corrected. Fundus examination showed the edematous area to have cleared almost completely. Moderate clearing of each cornea had occurred. Tests of the visual field disclosed that the relative depression was less dense and somewhat smaller. Four days after the adrenalin therapy and low salt diet had been instituted, they were discontinued. The visual acuity remained 20/40 + and no edema was noted on subsequent ophthalmoscopic examinations.

The patient was seen again six weeks later, after returning from a trip east. The cornea of each eye had cleared sufficiently to permit the patient to see 20/15 with each eye with glasses. Ophthalmoscopic examination was completely negative. The visual fields were normal.

SUMMARY. Although several reports of allergic reactions in the retina have appeared in the literature the etiologic significance of the allergy has often been questionable. These cases fall into three general categories—edema, hemorrhages, and retinal detachments. Experimentally, it has been demonstrated that allergic reactions can be produced in the retina. Anatomically, one would expect the edema to occur in the region of the macula.

A case is presented of a highly allergic individual in excellent general health, who developed edema of the macula during an exacerbation of allergic reactions elsewhere. The visual acuity definitely increased within a half hour after the administration of epinephrin. The acuity again diminished and again responded to epinephrin. The edema of the macula subsided after several days of epinephrin therapy.

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STATISTICAL ANALYSIS OF 1,000 CONSECUTIVE NEW EYE PATIENTS

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This is not what you might call a scientific paper, it is an introspection. What does an eye physician's practice consist of? How large is the proportion of the refractions, and of the different ocular diseases, the number of glasses ordered? Just how much good does he do, and in what percentage is he unable to render help? Such and similar questions come to the mind of many of us. The figures will vary in different offices according to the distribution of the professions among the patients, the ratio of age groups, and also according to the surgical inclination of the physicians. However, in our city with its schools, offices, railways, and with its industries, farming, mining, and forestry nearby, the patients are distributed among a fair cross-section of various professions. It is not the purpose of this analysis to find out the ratio of rare pathologic conditions. Tens of thousands of persons have to be examined for that purpose; for example, as was done lately by A. H. Downing[1] in his paper "Ocular defects in sixty thousand selectees."

Eye institutions used to issue yearly reports of their activities, but these do not cover those of the practicing ophthalmologist. In the literature of the last 25 years, I found only two papers dealing with this question. Gradle[2] (1931) subjected his new cases, seen in 1923, to a critical and statistical study. Gross comparisons were made for the following five years, but the percentage of the diseases and refractions varied immaterially. Bishop Harman[3] reported in three articles on "The findings of eye examinations," a collection of data furnished by 47 eye physicians in the first year, and by 79 in the second year. The patients obtained their ophthalmic treatment through the medium of the National Eye Service, established by the National Ophthalmic Treatment Board. The organization includes 90 percent of the population. In each of these years from 1934 to 1937, about 10,000 patients' findings were listed.

I chose to analyze a relatively small number only, but to do it from several angles. One thousand consecutive new eye patients, who had not been examined in the office previously were subjected to this study. "Old" cases were excluded, just as Gradle did, because the patients usually did not receive a complete examination again, and many came for another ailment than that which brought them the first time. This number is large enough to show a general trend, and the numbers show the result per thousand at the same time.

Two main indices were made. One contained the name, age, sex, the main etiologic diagnosis, whether refracted, with mydriatics, whether the glasses were changed, previously seen by ophthalmologist or optometrist, whether surgery was indicated, performed, consultation advised, and the final result. The age curve shows prevalence ,of the presbyopic age, and a strong shift toward the female—55.6 percent to 44.4 percent; in Gradle's paper 50.67 percent to 49.33 percent. This is due to the small number of men of military age; for example, in the age group 20-30, there were 41 men, and 92 women.

Etiologic diagnosis. In each case only

one, the main diagnosis, was entered into this tabulation. The tabulation is far from being correct, first because of the diseases with unknown etiology, to mention only keratoconus, blepharochalasis, hypersecretion of the meibomian glands, subconjunctival hemorrhage, and hypofunction of the lacrimal gland. The second difficulty is what to do with the tropias and phorias and with glaucoma. In the case of these two latter conditions, a special group was made for tropias and phorias, and another for glaucoma. In a case of concomitant strabismus there usually is a refractive error, but this does not produce it alone. In almost all cases also the fusion is weak. This weakness of fusion might be a congenital anomaly or it can be caused by an infectious disease. Paralytic squint was taken out of this group because, evidently, it is due to a disorder of the nervous system.

ETIOLOGICAL DISTRIBUTION OF 1,000 NEW CASES

Refraction	428
Inflammation	117
Secondary to	38
Injury	68
Secondary to	15
Degeneration	118
Tumor	9
Toxin	7
Heredity	15
Endocrine disorder	10
Vitamin deficiency	1
Allergy	19
Functional disorders	6
Glaucoma	17
Muscles	56
Unknown	20
No pathologic change	50
Unfinished	6

In almost 43 percent of the patients a refractive error was the main trouble. Inflammatory and degenerative conditions with almost 12 percent each were the next two largest groups. The exposed site of the conjunctiva, cornea, and lids was responsible for this high incidence. The explanation for the equally high percentage of degenerative conditions is found in the listing of such diverse conditions as, for example, senile cataract, macular degeneration, pterygium, infarct and concretions, senile vitreous opacities, and detachment of the retina in this group. The fact that 50 patients were found to have no pathologic process proved either the anxiety of parents, of neurotic persons, and of patients taking no chances with their health, or the lack of thoroughness of the examiner. The incidence of glaucoma (1.7 percent) is the number usually found in much larger series. Endocrine disorders were made responsible in 1 percent of cases. This includes the cases of exophthalmic goiter and hypofunction of the lacrimal glands. It is debatable whether this latter condition can be listed here, but there are several points to prove that the disturbed function of the sex glands is a factor in the etiology. Possibly several of the thousand patients have suffered from a slight degree of vitamin deficiency, but only in the case of keratomalacia was this directly responsible.

THE MOST COMMON MAIN DIAGNOSES

Presbyopia	143
Hyperopic astigmatism	80
Myopia and astigmatism	66
Cataract	62
Inflammatory diseases of the conjunctiva	54
No pathologic process	50
Myopia	35
Myopic astigmatism	30
Esotropia	30
Inflammatory diseases of the lid	29
Chalazion	26
Mixed astigmatism	26

These 12 groups included almost two thirds of all cases.

Refractions. The number of refracted patients was 682. Gradle refracted 69.2 percent. Out of our refracted patients, 285 (41.8 percent) were refracted under cycloplegia; 60.7 percent in Gradle's

series. The ratio of refractions with and without cycloplegia will widely differ in different offices. The fairly low percentage of refractions under cycloplegia is partly due to the fact that I very seldom use mydriatics for retinoscopy in persons over 50 years of age. Quite a number (371) of patients were asked whether their glasses were ordered by a physician or by an optometrist. The results were as follows:

Had glasses from an M.D.: 165—Received new glasses: 111—67.3 percent.

Had glasses from optometrist: 181—Received new glasses: 140—77.3 percent.

Had glasses, don't know where: 25—Received new glasses: 21—84.0 percent.

Glasses ordered by ophthalmologists had been worn for an average of 3.75 years, when they were changed. The glasses of eight patients had been ordered less than a year ago. Glasses ordered by optometrists had been worn for an average of 3.38 years, when they were changed. The glasses of 20 patients had been ordered less than a year ago. Of the 403 patients for whom new glasses were ordered, 180 were refracted objectively and 223 subjectively.

Major surgery was performed on 40 eyes (for example, cataract 20, squint 6, ablatio retinae 5, and the like); minor surgery on 54 eyes (foreign body of the cornea 24, chalazion 10, pterygium 8, cauterization of cornea 4, and the like). Surgery was advised in 35 cases but the patients have not returned. The number of hospitalized patients was 42. The number of blind patients with vision less than sufficient for counting fingers at 2 meters was 16. Ten of these had operable cataract in one of the two eyes, so the number of incurably blind patients was six. There were 59 persons with one blind eye, and 2 with an enucleated eye, but 13 of the blind eyes were operable for cataracts. The number of permanently blind eyes, out of 2,000 was 58, and adding 2 cases of anophthalmos this was 3 percent of all eyes examined.

The number of patients sent to other specialists for consultation or treatment was 21 (neurologist 9; internist, aniseikonia specialist 4-4; dermatologist, rhinologist 2-2; allergist, gynecologist 1-1). This number does not include those patients who were advised to see their family doctors.

Results. It would be interesting to know how many patients were cured, improved, left unimproved, and so on. However, it is hard to set up the criteria for a cure, and to find out the satisfaction or dissatisfaction of all 1,000 patients. Those who were given prescriptions for glasses and have not returned complaining of some trouble were considered cured. Strabismus patients when supplied with glasses were either cured (eyes straight), or improved (degree of strabismus decreased), or uncertain, or have not returned, or were unimproved. Almost all of the inflammatory conditions and injuries were cured; also the surgical cases. The result was considered in relation to the primary etiologic diagnosis. For instance, a patient with an absolute glaucoma in one eye, and a simplex glaucoma in the other eye, was considered improved if the tension in the fellow eye was normalized.

RESULT OBTAINED IN 1,000 CASES

1. No pathologic process	48
2. Immaterial, or therapy not necessary, or old glasses are good	116
3. Cured	588
4. Improved (e.g., blepharitis, strabismus, glaucoma)	67
5. Referred to other specialists	14
6. Uncertain (15 muscle cases)	21
7. Not returned (operation advised 35; treatment advised 10; examination not completed 7)	52
8. Unimproved or incurable	94
	1,000

Individuals of the first and second groups were aided by telling them that they had no ocular pathologic change or that their trouble was immaterial or would clear up without treatment, or would not cause trouble for a long time; for example, incipient cataract with vision better than 20/30. The first three groups comprised 752 patients; that is, three out of four patients. The 4th, 5th, 6th, and 7th groups (altogether 153) included patients whose trouble could be arrested or improved. A considerable number of them would probably be cured with surgery (for cataract, ptosis, strabismus, and the like) or treatment. Some of them would ask the help and opinion of other colleagues.

Finally, the last group, which should give us the strongest stimulus, is that of patients with incurable conditions.

1. Not concerning vision	20
Telangiectasis of the face and conjunctiva	
Narrow canaliculi	
Narrowness of the nasolacrimal duct, not yielding to probing	
Argyll Robertson pupils	
Nictitating blepharospasm, nystagmus	
Ophthalmic migraine. Probably few of these conditions can be improved, let alone cured	
2. Concerning vision, but that can be improved or cured later	14
Cataract, advanced in one eye, the other eye having good vision; or vision in each eye less than 20/30 but better than 20/70	
3. Concerning vision, cannot be helped	
A. Congenital or hereditary conditions	12
Pigment degeneration of the retina	
Malformation of disc	
Myopia gravis	
Cortical or macular aplasia	
B. Inflammation	11
Iridocyclitis with amaurosis	
Central chronic choroiditis	
Corneal leukoma	
C. Injury	4
Followed by enucleation	
Choroidal rupture	
D. Degeneration	16
Ablatio retinae with amaurosis	
Hole in the macula	
Senile macular degeneration	
Senile central scotoma	
Thrombosis of the retinal vein	
E. Vitamin deficiency with liver damage	1
F. Toxic, or systemic diseases	11
G. Glaucoma absolute	5

Deterioration of the vision was expected in 24. Thus there were 60 patients having incurable conditions with respect to vision. The avoidable pathologic conditions were groups B, C, E, part of F, and G, altogether 16 plus 16/x. The unavoidable pathologic conditions were groups A, D, part of F, and G, altogether 28 plus 16/x.

In a second category the anatomic index, all refractive errors and pathologic conditions according to the anatomic part of the eye were recorded.

REFRACTIVE ERRORS

Hyperopia	119
Hyperopia and astigmatism	210
Hyperopic astigmatism	92
Myopia	63
Myopia and astigmatism	115
Myopic astigmatism	50
Mixed astigmatism	68
Presbyopia	243
Aniseikonia	4
	964

PATHOLOGIC CONDITIONS

Conjunctiva	126
Cornea	89
Sclera	6
Iris	39
Choroid	30
Lens	110
Vitreous	15
Retina	25
Optic nerve and nervous system	23
Lid	104
Orbit	3
Muscles	129
Lacrimal apparatus	12
Glaucoma	27
Others	48
	786

There were 786 pathologic conditions for 1,000 patients, 1 for 1.27 patients.

Gradle's corresponding ratio was 1 to 1.37 (to 1.57), average 1 to 1.48. The inflammatory conditions of the conjunctiva comprise one ninth of all pathologic processes; this number differs largely from Gradle's who found some form of conjunctivitis in one third of pathologic changes. One can readily accept his explanation for this high incidence: "in a large city there is a great amount of smoke and dirt in the air, and that people are brought into more intimate contact with one another than in smaller cities or in the country."

There were 45 cases, 2.25 percent of the 2,000 eyes, of amblyopia with vision less than 20/40. This is a delicate and slippery diagnosis, and should be made only if the examination under mydriatics does not reveal any pathologic fundus process responsible for the poor vision, if it is in only one eye, if refraction was done under cycloplegia, and if all possibilities of a pathologic condition were considered, because it is a diagnosis by exclusion. Considering that a large percentage of amblyopia is ex anopsia, patching of the fellow eye in early childhood would have improved the vision in a considerable number of cases.

Bishop Harman's last statistics (4th year, 1937) show the following percentages compared to ours:

ERRORS OF REFRACTION

	1937 percentage	My Figures percentage
Hyperopia	13.35	11.9
Hyperopia and/or astigmatism	39.92	30.2
Myopia	4.17	6.3
Myopia—over 5D. in both eyes	3.20	
Myopia and/or astigmatism	18.70	16.5
Mixed astigmatism	5.64	6.8
Odd eyes	6.15	
Presbyopia	40.61	24.3
	131.74	96.0

OTHER EYE CONDITIONS

Diseases of conjunctiva—lids and/or sac	7.20	20.7
Diseases of cornea—all forms	2.18	6.5
Diseases of uvea—all forms	3.93	5.3
Optic neuritis or atrophy	1.15	1.3
Glaucoma—all forms and stages	0.79	2.7
Cataract—all forms and stages	7.90	11.4
Squint—latent or manifest	6.74	12.2
Constitutional diseases with ocular manifestations	4.30	3.2
Bad conditions of work	0.54	
Injuries or effect of injuries	1.09	8.5
Other material conditions	3.99	8.2
	39.82	78.0

I tried to break down my figures according to his grouping. This was not possible all along the table, because I did not record separately the odd-eyes (anisometropia), but listed the cases according to the larger amount of ametropia. The great majority in Bishop Harman's statistics were refractions, about 30 percent more refractions, but only half so many pathologic processes listed as in my series. The reason for this difference is that what the National Eye Service patients needed mostly was "just glasses." His compilation proved that even in such patients, the incidence of pathologic conditions was very high.

SUMMARY AND COMMENT

In a statistical analysis of 1,000 new, unselected, consecutive eye cases, the main group, 42.8 percent, as was expected, sought help for refractive errors, 15.5 percent for recent and old injuries, 11.8 percent for degenerative conditions. A large percentage (5 percent) had no pathologic condition whatsoever; 68.2 percent were refracted, 41.8 percent of this number under cycloplegia. The num-

ber of glasses ordered was 403. One out of seven persons came because of presbyopia. A larger percentage of glasses ordered by optometrists were changed than of those previously ordered by physicians. Glasses which had to be changed were on the average worn for a shorter time when ordered previously by optometrists than when ordered by ophthalmologists. The number of blind persons was 16, incurably blind only 6. One blind eye was found in 61 persons, and 60 (3 percent) of all eyes were incurably blind.

About 75 percent of all patients were cured, or had no or only insignificant pathologic change. There was a group of 15 percent who were unimproved, uncertain, unfinished, who did not return, or referred to other specialists.

Finally, 1 out of 11 (9.4 percent) patients could not be helped at the time of the examination. When deducting the cases not concerning vision (2 percent), and those with progressive cataract (1.4 percent), there was left a large group of 60 patients (6 percent) whose condition was incurable. Twenty-four (2.4 percent) even had to expect a further deterioration of the vision. Etiologically, the largest group (16) of the 60 incurable patients were those with senile degenerative conditions. It is my belief that after the great progress made in the direction of prevention (inflammatory diseases, injuries) and after conquering most of the inflammatory eye conditions with the new drugs, the trend of research should be to delay, or prevent, or conquer, the senile degenerative eye diseases.

The large number of amblyopic eyes (2.25 percent) makes it necessary to call the attention of the general practitioner, who sees these squint cases at an early age, to the possibility of improving a great proportion of these eyes by patching the good eye at this age.

The ratio of pathologic processes other than refractive errors, to patients, was 1:1.27 which proves again, to quote Gradle, "the inadvisability of examination of the eyes by individuals not medically trained in the recognition of ophthalmic diseases."

Old National Bank Building (8).

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A METHOD FOR THE EXTRACTION OF DISLOCATED LENSES FROM THE VITREOUS*

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Displacement of the lens has long presented a perplexing and provoking challenge to the ophthalmic surgeon, and equally perplexing methods of dealing with this problem have been suggested as a possible solution, dating from 1888 to the present day.[1] Displacements are usually divided into two major classifications, the congenital and the acquired types of dislocation. This brief report is primarily concerned with the acquired type of dislocated lens, which may be either traumatic or the result of intraocular disease causing inflammatory or degenerative changes in the zonule of Zinn.

Hitherto, there has been a great deal of controversy as to the best approach and *modus operandi* in dealing with these cases. Some surgeons have deemed it advisable to follow a course of nonsurgical procedure as the lesser of the two evils. Fear of the frequent operative or postoperative complications has been the deciding factor. Others have favored various operative techniques which, in a large percentage of the cases, have been either unsuccessful in expelling the lens, or have resulted in secondary glaucoma, due to trauma during the operation. Knoflach, at the Czechoslovakian Congress of Ophthalmology, in 1931, presented a review of 150 cases, in which he reported that 97 percent of the cases in which operation was performed without iridectomy resulted in secondary glaucoma, whereas 62 percent resulted in secondary glaucoma if iridectomy was done.

Before any course of treatment can be considered, however, the surgeon is faced with the problem of accurate localization of the lens. In cases of subluxation, whether the lens is transparent or cataractous, its condition may be affected by partial posterior synechiae, as a result of preceding inflammatory processes. The importance of slitlamp examination cannot be overemphasized in cases of this type. Its use in localizing the adhesions of the iris to the lens, the status of the aqueous, the presence or absence of deposits on Descemet's membrane, and the condition of the vitreous are invaluable data. Ultraviolet light can also be utilized to great advantage because of its power of fluorescing the crystalline lens under its beam.

Where nonsurgical procedure is favored, the lens may remain in the pupillary aperture indefinitely. Eventually, however, an irritative iridocyclitis, secondary glaucoma, or complete dislocation of the lens may take place. In addition, the patient is usually inconvenienced by the marked astigmatism and monocular diplopia causing confusing images, so common in cases of subluxation.

If the dislocation is complete, the lens may fall into the anterior chamber, giving the classical appearance of a drop of oil, if still transparent, or a white disc, if opaque. Here, too, the obvious complications are iridocyclitis, hypertension, and degenerative changes ultimately resulting in complete destruction of the eyeball. Should the lens fall into the vitreous, the period of tolerance may be of longer duration, but eventually degenerative processes produced by the action of a foreign body (the lens) irritating the ciliary body and ultimately resulting in a

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secondary glaucoma, will take place.

If surgery is preferred, the advantage of operating on the partially dislocated lens before complete dislocation occurs, cannot be discounted. Likewise, in cases of congenital dislocations, the chances of obtaining almost normal vision by early surgery are much greater than if the surgeon waits, permitting the patient to go on to adult life with impaired vision due to lack of retinal education. The surgeon is well aware of these facts. Unfortunately, past experience has, all too frequently, brought unfavorable results to his attention, since the literature on the subject, while extensive, provides only apparently unsuccessful methods and techniques of dealing with removal of the dislocated lens.

Otis and Russell M. Wolfe and P. Georgariou[2] described a procedure by which the "lens was speared with a straight needle, then lifted forward and downward. A curved needle was then inserted at the opposite limbus, engaged in the lens, and cross discission performed." It was necessary to repeat this procedure one month later. These authors, however, reported a visual result in only one of their cases, that of a boy six years of age.

Similar techniques of discission with two needles have been suggested by various surgeons, in the hope that either complete absorption or shrinking of the lens will result. This has been particularly favored in cases of younger patients. The success of such a procedure, however, is questionable and limited to a mere handful of isolated cases. Its advisability must be seriously questioned because of the danger of the lens falling into the vitreous while the surgeon is attempting to pin the lens. The floating lens, surrounded by vitreous, provides an added impediment to absorption, even after satisfactory discission.

Legrand, in his article on dislocated lenses,[1] speaks of the importance of surgical procedure in acquired cases. His method in dealing with this problem stems from the unfavorable results so common where surgery is performed. Thus, to Legrand, there is no question but that surgery is the only practical method of dealing with these cases. His method consists, first, of placing the patient on his stomach, with the head lower than the feet, thus causing the lens to fall into the anterior chamber. In one case, after the patient was placed in the aforementioned position, Legrand attempted to contract the pupil with eserine. This was unsuccessful. Consequently another method was devised, whereby he placed himself under the head of the patient, inserted the Graefe knife through the cornea into the anterior chamber, leaving the blade in, and removing the handle by unscrewing it. Eserine was applied and the patient turned over on his back. Section was then made and the lens removed with a spoon. This procedure was used in two cases, apparently with success.

Archimede Busacca[3] suggested the following procedure: The pupil is dilated with euphthalmine, the knife needle introduced through the cornea at the limbus and then through the lens. The lens is brought into the anterior chamber and the assistant introduces a Graefe knife into the cornea at the 3-o'clock position through the lens and then at the 8:30-o'clock position. Miotics are then used, and section is performed with some loss of vitreous. The lens is removed with a loop. Similarly, Ewing[4] in his paper, "The broad keratome in the removal of a dislocated lens," described a case in which the lens was dislocated halfway through the pupil and wedged firmly in the outer portion of the anterior chamber, inducing a secondary glaucoma. The keratome was introduced at the temporal side and the blade passed behind the lens, thus fixing

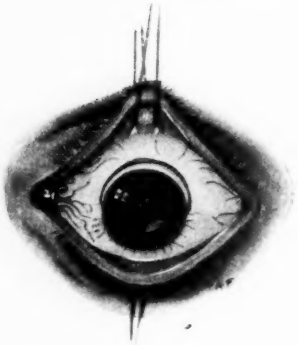

FIG. 1

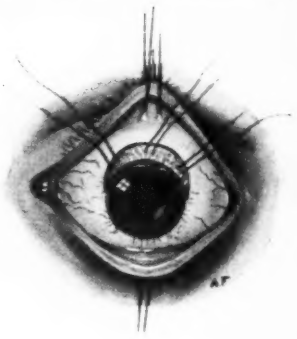

FIG. 2

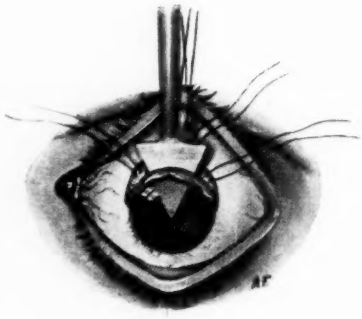

FIG. 3

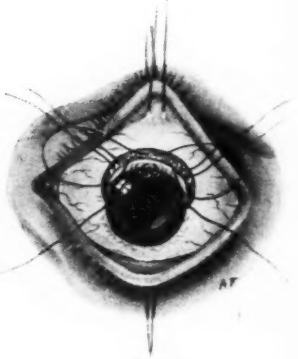

FIG. 4

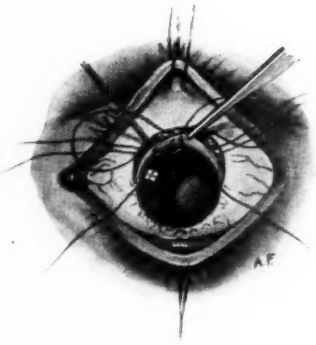

FIG. 5

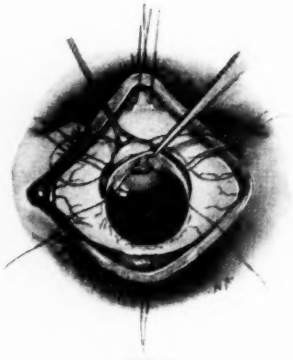

FIG. 6

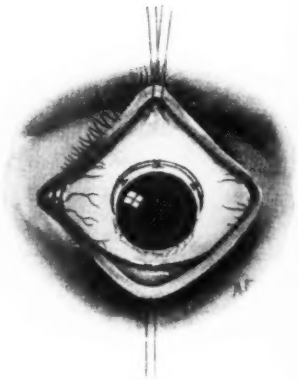

FIG. 7

FIGS. 1-7 (BONACCOLTO). SEVEN STEPS IN THE EXTRACTION OF A LENS DISLOCATED INTO THE VITREOUS.

it. Pressure was then created with Daviel's spoon and the lens was expressed.

The procedures previously described are open to criticism. They apparently involve a good deal of risk, and the cases in which these methods were used appear to have been carefully selected.

A method has been devised whereby the danger of trauma to the eye during surgical procedure has been greatly reduced, the removal of the crystalline lens being much simplified. The results in unselected cases wherein this method was used were favorable. The group to be reported consists of seven cases, chosen at random, in patients who were all successfully operated upon.

Method of operation

The procedure used in removing the dislocated lens is similar to that I have employed in cataract extraction. First, akinesia of the facial nerve is obtained. Then follows the retrobulbar injection of novocaine with adrenalin, serving a two-fold purpose; (1) that of anesthetizing and immobilizing the globe, and (2) of concomitantly reducing the intraocular pressure, frequently the cause of the loss of vitreous during the extraction. Sutures are then passed at the margin of the lid (fig. 1) previously injected with novocaine, in order to keep it open, thus (1) eliminating the assistant's task of holding the speculum during the delivery in order to reduce uncomfortable increase in pressure, and (2) facilitating the release of the lids and permitting their closure, should the necessity arise; and (3) preventing accidental increase of intraocular pressure during the operative procedure due to the disturbance of the speculum. Experiments with various types of specula have failed to eliminate this problem.

Bridle suturing of the superior rectus is helpful because of its aid in rotating the eyeball downward, thus facilitating the section at the superior limbus. This, if combined with the injection of a drop of novocaine at its insertion, serves to reduce the uncomfortable feeling of which the nervous patient frequently complains, thus averting possible loss of vitreous due to the unnecessary contraction of this muscle.

An incision is then made in the conjunctiva, approximately 2 to 3 mm. above the superior limbus, and continued concentric with it, including the superior half of its circumference (fig. 2). The conjunctiva attached to the cornea is undermined as in the preparation for a trephining, so that the margin of the cornea is exposed.

A double-armed, nontraumatic (6-0) silk suture is passed 2 mm. above the superior limbus, the fine threads resting above the upper lids so that they are outside the field of operation. Two additional silk sutures (6-0) are then inserted at the same distance, one on either side of the superior suture. Corneal section is made at the limbus with the keratome, and enlarged laterally with scissors (fig. 3).

Upon completion of the section, the arms of the superior suture are passed through the thin border of the conjunctiva attached to the cornea, from the inner surface to the outer surface (fig. 4). The iris is grasped with the fine forceps near its superior insertion and buttonholed with small scissors.

The two lateral sutures are not passed at this stage. Should the emergency arise, the central one is more than adequate to hermetically seal the sclerocorneal wound. Two loops are left at the side in order to avoid interference with the extraction of the lens.

As the next step the conjunctival flap is firmly held with a smooth, fine forceps,

while a cataract loop is introduced into the vitreous and passed quickly behind the lens, pushing it against the cornea (fig. 5). Then, with a quick traction movement, the lens is expelled from the anterior chamber. By holding down the conjunctival flap the cornea is not permitted to gape widely, and thus, loss of vitreous is prevented (fig. 6).

The superior sutures are gently but firmly tied, and the iris is replaced with a spatula. Following this the auxiliary sutures are passed and tied, the same procedure being utilized as for the middle one (fig. 7).

Report of cases

By this procedure the problem of removing the dislocated lens is simplified, and the danger of surgical trauma diminished. The possibility of the lens escaping into the vitreous is largely reduced by holding the conjunctival flap with the forceps, thereby permitting the loop to push the lens against the cornea and preventing its escape into the vitreous. Thus the lens can be easily expelled by traction without causing the wound to gape during its exit. By this procedure the danger of increased intraocular pressure developing during delivery is eliminated, as well as the loss of vitreous. The three scleral conjunctival sutures permit hermetic sealing of the wound, remove the danger of prolapse of the iris, and similarly reduce the astigmatic error to a minimum. When the surgeon is faced with the choice of surgery this method will provide a means of extracting a dislocated lens from the vitreous with the least possible immediate trauma, and less danger of ensuing complications.

Case 1. Mr. L. L., age 56 years, presented upon examination, in the right eye, a cortical cataract, and in the left eye an immature cortical cataract, dislocated inferiorly. Vitreous protruded into the anterior chamber. He was operated upon on April 26, 1944, and made an uneventful recovery. On May 23, 1944, with a +9.00D. sph. ⌯ +2.00D. cyl. ax. 180°, vision was 20/20.

Case 2. Mr. D. I., aged 43 years, had had poor vision with the left eye of several years' duration. There was no history of trauma. The right eye was normal, with vision 20/20. In the left eye the lens was incompletely opaque and subluxated in the lower part of the vitreous. Tension was 22 mm. Hg (Schiøtz). The patient was operated upon on May 4, 1944, and made an uneventful recovery. On June 10, 1944, with a +9.00D. sph. ⌯ +1.50D. cyl. ax. 20°, vision was 20/20−.

Case 3. Mr. W. M., aged 36 years, had had chronic uveitis, in the right eye, of unknown origin, for eight years. All laboratory and X-ray tests proved to be normal. In 1941 a cataract began to develop, and and in 1943 the lens became dislocated. On examination the right eye presented some very minute deposits on Descemet's membrane. The lens was completely cataractous and dislocated in the inferior portion of the vitreous. The left eye was normal, with vision 20/20−. The patient was operated upon on May 25, 1944, and the lens extracted from the vitreous. He made an uneventful recovery, with no loss of vitreous. On July 10, 1944, with a +10.00D. sph. ⌯ +1.00D. cyl. ax. 60°, vision was 20/30+. Descemet's membrane presented almost no deposits.

Case 4. Mr. N. G., aged 44 years, had suffered intermittent attacks of choroiditis in the left eye for nine years. Upon examination, on July 10, 1944, the left eye presented some pigment deposits on Descemet's membrane, but the aqueous

ray was negative. The lens was cataractous, with some calcified areas, dislocated superiorly, temporally, and nasally, but still adherent to the inferior border of the pupil. The right eye was normal, with vision 20/20. The patient was operated upon on July 19, 1944. Before the lens was looped, it was necessary to separate the posterior synechiae. Recovery was uneventful. On July 20, 1944, vision was improved to 20/100 with +10.00D. sph. ⌯ +1.00D. cyl. ax. 15°. The fundus presented numerous areas of old choroiditis.

Case 5. Mrs. A. F., aged 60 years, came to the Manhattan Eye, Ear, Nose and Throat Hospital with a painful, blind right eye. Vision in the left eye was reduced also. On examination, the right eye presented severe conjunctival argyrosis, acute glaucoma, and nuclear cataract. The left eye presented a nuclear cataract. The patient had an iridectomy performed on the right eye on August 22, 1944. Recovery was uneventful, but upon examination on November 1, 1944, a subluxation of the lens, in the inferior portion of the vitreous, was revealed. The patient was operated upon on November 7, 1944, for dislocation of the lens. There was no loss of vitreous.

Case 6. Mr. J. J., aged 65 years, presented, upon examination, a chronic simple glaucoma in the right eye. There was a Morgagnian cataract in the left eye, luxated in the lower part of the vitreous. The patient was operated upon on August 16, 1944, and had an uneventful recovery. On September 20, 1944, with +11.00D. sph., ⌯ +2.50D. cyl. ax. 180°, vision was 20/40. Tension was 24 mm. Hg (Schiøtz).

Case 7. Mrs. R. G., aged 50 years, had had her right eye enucleated three years ago, following an absolute glaucoma. On November 3, 1944, she presented a dislocated, black cataract in the left eye. It was still suspended by a few fibers of the zonule at the 12- and the 6-o'clock positions, so that the lateral equatorial edge was presenting and protuding into the anterior chamber. Tension was equal to 45 mm. Hg (Schiøtz). The patient was operated upon November 20, 1944, and made an uneventful recovery. Ophthalmoscopic examination revealed numerous myopic atrophic areas of the choroid. On December 23, 1944, with +5.00D. sph. ⌯ +1.50D. cyl. ax. 180°, her vision was equal to 20/40. Tension was 22 mm. Hg (Schiøtz).

123 East Sixty-first Street (21).

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RESTORATION OF PATENCY OF THE NASOLACRIMAL DUCT BY MEANS OF A VITALLIUM TUBE

A PRELIMINARY REPORT

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Many attempts have been made to restore the patency of the obstructed lacrimal passages by means of curettement, diathermy,[7, 12] or electrolysis and the use of probes, styles, and tubes. Any of these procedures may, at times, be successful, but since, for the most part, they have failed, they have, to a large extent, been supplanted by the various types of dacryocystorhinostomy.

In the past, when styles or tubes were introduced into the nasolacrimal canal, they were usually designed to be removed at a later date. As a rule, the upper end of the tube or style was bent and left projecting either from a canaliculus or from an incision into the sac at the inner canthus, so that it could be pulled out later. Callahan[1] used a soft, thin-walled silver tube which was later pulled out through the nose.

In the past, there has been a justifiable aversion to putting tubes in the lacrimal canal and leaving them permanently, because of the well-known surgical fact that most metals, when buried in the tissues, caused a foreign-body reaction which varied from a mild inflammatory cellular infiltration to fibrosis or even necrosis.

In 1937, Venable, Stuck, and Beach[9] carried out extensive experiments on dogs as to the effect on the tissues of metals implanted in bones. Not only the macroscopic changes were noted, but the histologic and roentgenologic changes as well. Biochemical studies, also, were made of the tissues, the exudates around the metals, and of the metals themselves. They demonstrated conclusively that all of "the metals commonly used in surgery were subject to electrolytic activity in body fluids," and, that "the extent of tissue damage was roughly equivalent to the amount of galvanic action which took place." In the case of pure metals, there is, of course, no galvanic action, and whatever reaction does take place is due to a chemical action of the body fluids on the metal. The metal used for lacrimal tubes in the past was usually gold or silver. The gold was, of course, not pure gold, but an alloy, so galvanic action would occur, and sterling silver is 925/1,000 silver, so here, also, electrolytic action and a chemical reaction as well would take place when the metal was surrounded by body fluids. The so-called "foreign-body reaction" is not, as the name would imply, a protest on the part of the tissues to the mere presence of a foreign substance; it is an inflammation due to chemical or electrolytic activity in the substance and in the absence of such activity there is no "foreign-body reaction."

In the course of their experiments, Venable, *et al*,[10] found only one metal free from chemical and electrolytic activity in human serum and, therefore, completely inert in the body, an alloy named Vitallium.* (The approximate composition of Vitallium is cobalt 65 percent, chromium 30 percent, and molybdenum 5 percent.)

The first clinical case in which Vitallium was used was in 1936. Since then, its application has become widespread;

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*Vitallium is a product of the Austenal Laboratories, Inc., 224, East 39th Street, New York City.

first in bone surgery, but later in appliances in many fields of surgery other than orthopedics. Its first recorded use in ophthalmology was as material for orbital implants by Doherty.[2]

Pearse[5] reported the successful use of Vitallium tubes in stricture of the common bile duct. He found that Vitallium tubes placed in the common bile duct of dogs remained patent without erosion of the metal or deposition of pigment salts on them.

Lord and Eckel[3] reported on the use of Vitallium tubes in the ureters of dogs. They stated that no stone, gravel, encrustation, or other pathologic abnormality occurred on the tubes and that the latter retained their original luster over a period of nine months.

It seemed to me that such a metal would be an ideal material for a tube to be placed permanently in the bony nasolacrimal canal to restore its patency in cases of stenosis, and I have used such a tube in four cases with, so far, very gratifying results.

The operation is performed as follows:

The sac is exposed by a curved incision in the skin, beginning at the level of the internal canthal ligament, 3 mm. medial to the inner canthus, and extending downward concentrically to the anterior lacrimal crest for a distance of about 13 mm. The internal canthal ligament need not be cut, and the incision need not be so large as for a dacryocystorhinostomy or a dacryocystectomy. The orbicularis fibers and deep fascia are divided with scissors and blunt dissection, exposing the lower half of the sac. A small incision is made on the anterior surface of the sac near where it enters the bony canal. An oval spoon curette is introduced through this opening and passed into the bony canal, the walls of which are then thoroughly curetted. The probe is withdrawn, and the Vitallium tube, held with narrow conjunctival forceps one blade of which is in the lumen of the tube, is inserted through this opening into the bony canal and pushed downward until the shoulder rests on the rim of the canal. The tube is rotated so that the shoulder points outward and temporally. The incision in the sac is closed with a single 000 plain catgut suture. The orbicularis and deep fascia are closed with several similar sutures and the skin is closed with a running dermal suture. A pressure bandage is applied and left in place for from three to five days. The skin suture is removed on the sixth day. Irrigation of the canal, through the upper or lower punctum, is done from one to two weeks after the operation.

The procedure is designed only to restore patency of the bony canal, which, in most cases, is the site of obstruction. Strictures in the sac itself must be treated by probing, irrigation, or other means. However, strictures in the membranous sac may be in part inflammatory and, when adequate drainage of the infection below is established, may clear up, at least to the extent of allowing the passage of tears. This was found to be the fact in two cases. (It is possible that strictures of the membranous sac, such as are found after wounds and fractures across the sac, might be relieved by a tube longer than the one described, with a shoulder separating the part in the sac from the part in the bony canal. Such a tube could be inserted either through an incision extending the whole length of the sac, or through an incision at the inner canthus, in front of the caruncle, into the upper part of the sac.)

The use of a Vitallium tube, as just described, has several definite advantages over a dacryocystorhinostomy, not the least of which are its simplicity and freedom from secondary nasal hemorrhages. In the intubation operation, once the sac is exposed, the operation is practically

Fig. 1 (Muldoon). Case 1. Front view showing tube in the lacrimal duct.

over, whereas in dacryocystorhinostomy, it is just the beginning. Both dacryocystorhinostomy and intubation accomplish the same end—that is, the making of a passage for tears to drain into the nose—and the intubation does it in a more anatomic manner.

There is considerable normal variation in the diameter[6,11] of the bony nasolacrimal canal in different subjects but, in most cases, a tube with an outside diameter of 3 mm. can be easily inserted. In their manufacture the tubes have to be cast, and the walls cannot be cast with a thickness much less than 0.5 mm.* Since this is the case, a tube with an outside diameter of 3 mm. would have an inside diameter of 2 mm., which, apparently, is sufficiently large for good drainage.

In the first case, the only tube available was a straight tube with a shallow groove near either end, such as had been used by Blakemore *et al.*,[4] in their work on arterial anastomosis. The outside diameter of the tube was about 3½ mm., the inside diameter 2½ mm., and the length 18 mm. It was possible to push it into the duct after curettement, but it was a tight fit and would undoubtedly be too large in some cases. In the second case, I had a tube made with an outside diameter of 2 mm. which, since the walls of the tube have to be almost 0.5 mm. thick, left an inside diameter of only a little over 1 mm. The tube was 18 mm. long and had a narrow shoulder on one side of the upper end to prevent its slipping down into the nose. The lower end of the tube was slightly tapered. This tube slipped into the duct very easily and, although it apparently functioned well, it would seem desirable to use a tube with a slightly larger inside diameter whenever possible. In the last two cases, the tube used had an outside diameter of slightly less than 3 mm. and an inside diameter of 2 mm. It was 18 mm. long, the lower end slightly tapered, and the upper end had a narrow shoulder on one side. The length of 18

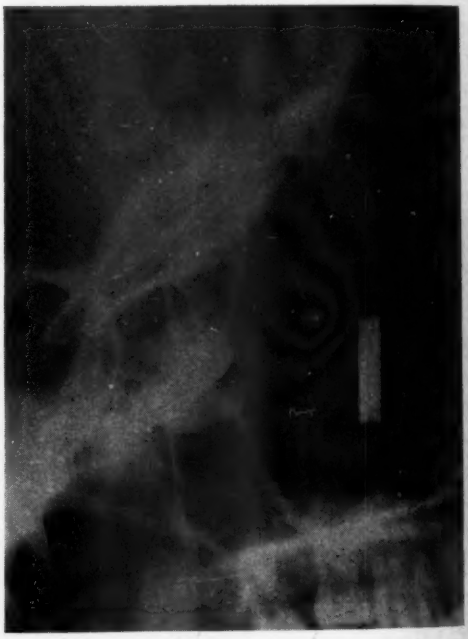

Fig. 2 (Muldoon). Case 1. Side view, showing tube in the lacrimal duct.

* Since Vitallium is very hard, it cannot be drawn into tubes and must be cast at a high temperature. The difficult problem of casting Vitallium tubes of this length and diameter was solved by Mr. E. J. Duffin of the Duffin Laboratories of San Antonio, Texas.

mm. insures the tube's projecting several millimeters into the nose, which is advantageous in that there is sometimes a membranous[11] canal in the nasal mucous membrane at the lower end of the bony duct.

Report of cases

Case 1. Mrs. C. A., aged 32 years, had had epiphora and a mucopurulent discharge from the tear sac on the right side for over a year. It had been treated by probing and irrigation without permanent benefit. She had had two acute attacks of dacryocystitis during this time, which necessitated hospitalization and medication with large doses of sulfa drugs. The infection subsided without incision or rupture of the sac. Three weeks previous to operation, she had a third attack and developed an abscess which ruptured spontaneously and resulted in the formation of a fistula in the skin overlying the sac.

On March 7, 1945, the operation was performed as herein described, with the patient under sodium pentothal anesthesia. A perforation was found in the anterior wall of the sac which communicated with the skin fistula, and the wall of the sac around the perforation was necrotic. Penicillin, 100,000 units in doses of 10,000 units every three hours, was administered beginning 24 hours, postoperatively. One week after the operation, the skin incision and fistula had healed; two weeks after the operation, saline solution tinted with flourescein injected into the lower canaliculus, passed freely into the nose.

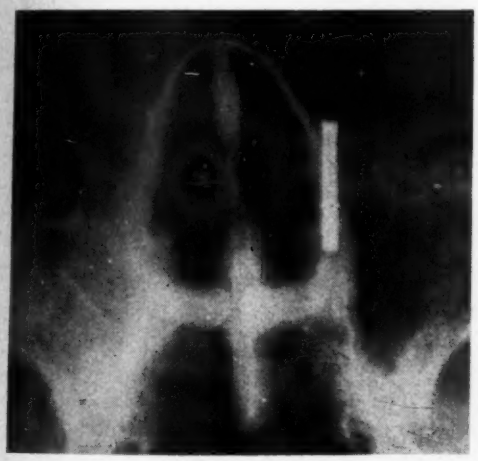

Fig. 3 (Muldoon). Case 2. Front view, showing tube in the lacrimal duct.

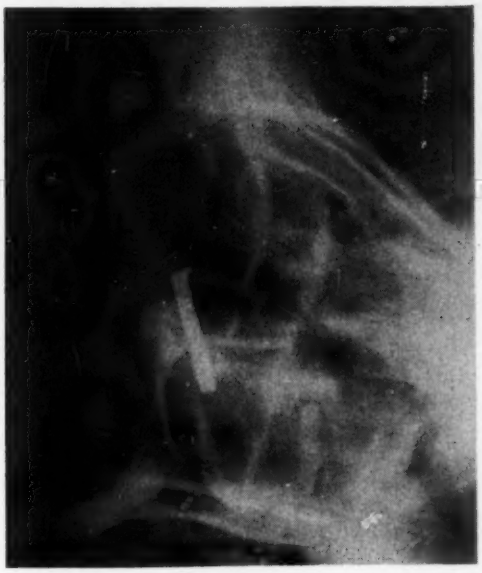

Fig. 4 (Muldoon). Case 2. Side view, showing tube in the lacrimal duct.

Case 2. Mrs. M. E. G., aged 80 years, had suffered with epiphora for several years. Her chief complaint, however, was that a tense, painful swelling would appear in the region of the tear sac and remain for several weeks. It could be reduced only by firm and long-continued pressure, which would finally evacuate mucopus into the conjunctival sac. She had had four acute attacks in the last two years, the present attack having begun three weeks previous to operation. On the day before the operation, I was unable, with any safe amount of pressure, to empty the sac. Further, when saline was

injected into the lower punctum, it immediately returned clear through the upper punctum and did not change the size of the swelling, indicating that there was a stricture in the upper portion of the sac in addition to the obstruction in the bony canal.

On March 29, 1945, with the patient under intravenous pentothal-sodium anesthesia, a Vitallium tube was inserted in the bony canal in the same manner as in the previous case. Following operation, there was considerable swelling of the lids, due, probably, to extravasation of saline into the tissue of the lids when an attempt was made to force fluid into the sac through the lower punctum at the time of operation. The patient was given 100,000 units of penicillin in doses of 10,000 units every three hours, postoperatively. Convalescence was uneventful. The swelling in the tear-sac region has not recurred. There is a slight epiphora, of which the patient does not complain.

Case 3. Mrs. B. B., aged 59 years, had had epiphora of the right eye for four or five years and, in addition, mucopurulent material would form in the sac, which she could evacuate by pressure over the sac. In the last six months, the condition had become very troublesome and she had to press out the secretion more often.

At the last preoperative examination, the sac could be emptied readily by slight pressure over it; also, the contents of the sac could be washed out easily by irrigation through either punctum.

The patient had a mild diabetes.

On April 24, 1945, with the patient under intravenous pentothal-sodium anesthesia, the sac was exposed, the duct curetted, and a Vitallium tube inserted into the bony nasolacrimal duct. The patient had an uneventful convalescence and was dismissed from the hospital on the third day. The discharge from the sac has entirely cleared up, and there is no epiphora. Fluorescein solution, dropped in the eye, appears later in the nose.

Case 4. Mr. C., aged 57 years, had been struck on the back of the head by a heavy falling weight 17 years previously. The accident caused a skull fracture, and knocked him forward on his face, so that a fracture of his nose and most of the facial bones and both orbits resulted. The right eye was displaced downward about 1 cm. and there was a paresis of all the extraocular muscles except the internal rectus. He had had considerable plastic work done for the nasal deformity but later developed a carcinoma in the scar tissue which was treated with radium, and the graft melted away, causing a recurrence of the deformity. The left eye showed no impairment of vision or motility. He had had tearing on the left side, however, since the accident. Later, in the region of the tear sac a swelling appeared, which he was able to reduce by pressure. The contents could be evacuated into the nose until about six months ago, when he could no longer press the secretion into the nose, but could empty it into the conjunctival sac.

Examination showed the sac to be enormously distended. Considerable pressure was necessary to express its contents into the conjunctival sac. Fluid could be injected easily into the sac through either punctum, but would not pass into the nose.

On April 26, 1945, with the patient under intravenous pentothal-sodium anesthesia, the operation was performed. The anatomic land marks had been destroyed, so the incision had to be made where the sac could be felt. The sac was exposed and incised, and a probe introduced into it. No bony duct could be found, so a large Ziegler probe was thrust into the

nose in the location where it was thought the nasolacrimal duct should be. The probe was located in the nose by a probe passed through the nares. The probe was withdrawn and a Vitallium tube pushed through the same passage. There was considerable nasal hemorrhage, which was controlled with a nasal pack. The nasal pack was removed the next morning, and the patient discharged from the hospital on the third day, postoperatively.

Since the operation, the sac still fills up, but it has not become distended and the patient is able, by pressing, to empty it into the nose. The secretion which is washed out of the sac is more mucoid and less purulent than before.

The result in this case has not been so good as in the foregoing three cases. It probably would have been better if a larger tube had been used. The patient, however, feels he has been benefited by the operation.

The first two cases in which I used a Vitallium tube were in patients of Dr. Robert E. Parrish, whose coöperation is gratefully acknowledged.

I am indebted to Dr. C. S. Venable for his assistance and advice.

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EXPERIENCES WITH THE SURGERY OF THE ANOPHTHALMIC ORBIT*

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It has been a recent privilege to supervise the fitting with artificial eyes of a large number of anophthalmic sockets. A majority of these sockets were the result of enucleations performed some years prior to entry into the Service. A smaller number were comparatively recent battle casualties. The patients did not originate from any one section of the country, but probably presented a good cross section of anophthalmic orbits. A number of interesting problems have presented themselves; some have been solved, others require further investigation.

Possibly the commonest single cosmetic blemish remaining after the fitting of an artificial glass eye is the sinking or retraction of the upper lid associated with a loss of the usual crease. To account for this certain theories have been advanced by several observers.

(1) The possibility presents itself immediately that the loss of the globe alters the direction of pull of the levator palpebrae muscle so that it pulls backward, rather than upward.

(2) Loss of orbital tissue, such as occurs when a depressed fracture of the inferior orbital wall permits the orbital contents to enter the antrum, produces a most disfiguring depression in the upper lid. This depression can be entirely eliminated by mechanically raising the orbital content to its former position.

(3) Traumatic atrophy of the orbital fat has been postulated following severe injury. Pfeiffer[1] has demonstrated satisfactorily that such cases are usually, if not always, associated with an unrecognized fracture of the orbital floor. It has, however, been observed here that sinking or retraction of the upper lid may not be noticed for some months after the initial installation of an artificial eye. This suggests a delayed atrophy of orbital tissue.

(4) Dimitry[2] has suggested that the overlapping of the recti muscles across the implant is responsible for this defect. The inferior rectus muscle pulls the superior rectus downward and it, in turn, by means of its fascial attachments, pulls the levator downward and so causes a depression of the upper lid.

(5) Artificial eye makers[3] have observed that when a large implant is present in an orbit, it may be sufficient to destroy the fold in the upper lid, and so produce an apparent ptosis.

Whatever may be the cause of this defect, its remedy presents a difficult problem. The surgeon first usually attempts to obtain the best prosthesis possible and refers the patient to the artificial-eye makers. A certain number of these defects can be improved by fashioning a thicker or differently shaped prosthesis. In only the relatively minor degrees of sinking, however, can a good result be effected by this means. Gougelman[4] has stated that he has repeatedly attempted to overcome this difficulty by adapting a fuller eye, but that the fullness thus produced is unnatural and far less pleasing than the original condition. The use of a larger prosthesis produces an unsightly stare. A flange or bolster placed on the top of the prosthesis merely lifts the upper lid and exposes the sclera above the iris. He has stated that a better cosmetic appearance will result by the inser-

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tion of a smaller prosthesis which permits a partial closure of the fissure.

We have attempted to meet this problem by several different procedures: (a) By careful attention to the dissection of the superior rectus muscle at the time of enucleation, so that its attachments to the levator can be severed. (b) Delayed implantation of a glass sphere. (c) Implantation of cartilage in the floor of the orbit, in cases of depressed fracture. (d) Dermal graft to the upper lid.

On the theory that the superior rectus muscle tends to pull the levator muscle down by means of its fascial attachments, particular attention has been paid in selected cases to careful separation of the superior rectus muscle from the levator palpebrae. Results have been inconclusive. On discharge from the hospital, some patients have presented an upper lid in excellent position, but follow-up examinations have not been satisfactory because of the exigencies of the military service. It must also be admitted that patients, to whom no attention has been paid as to separation of the superior rectus muscle from the levator, have also left the hospital with satisfactory upper lids. One such patient who returned three months later was observed to have developed some of the characteristic sinking. This was not present when he left the hospital.

It has been surprising to observe the number of enucleations which have been performed without an immediate implantation in Tenon's capsule. My figures are not complete on this point, but more than 50 percent of the patients seen have not had an implant in position. It is also my impression that these patients without implants have more frequently presented the unsightly retraction of the upper lid than have the patients with implant. However, it again must be admitted that patients with apparently satisfactory implants have also presented this defect on numerous occasions, whereas some patients without implant have a cosmetically excellent appearance.

When presented with such a patient, the primary procedure has frequently been the implantation of a sphere in Tenon's capsule. It has been questioned whether one actually finds Tenon's capsule when making these delayed implants. It appears to me very doubtful that this can be done under general anesthesia, except by accident. After an enucleation the collapsed capsule may be displaced to one side or the other, provided no sphere is implanted at the time of enucleation. Under local anesthesia the displaced capsule can be found by observing the source of attachment of the recti muscle as demonstrated by conjunctival dimpling when the muscles retract. I have repeatedly entered a definite fascial plane between either the vertical or lateral recti when the dissection has been done under local anesthesia and the muscle insertion could be identified by having the patient frequently move his eyes, from side to side or up and down. Into this tough fibrous envelope, it has not been difficult to insert a sphere of about 14 to 16 mm. in diameter in the manner described by Wheeler.[5] Such an implantation is, however, not always necessarily in the midline. This may be because the capsule itself has been displaced when its walls were not held apart by an immediate implant. A sphere implanted in the capsule does not move out of position unless the capsule is torn. If such a tear occurs during the operation, as evidenced by the herniation of orbital fat into it, I immediately suture the rent. If an attempt is made to implant a sphere in the geometric midline, without reference to the capsule, it will usually migrate to some other position. Consequently, it is probably better to place the implant in its proper capsule, even though it be eccen-

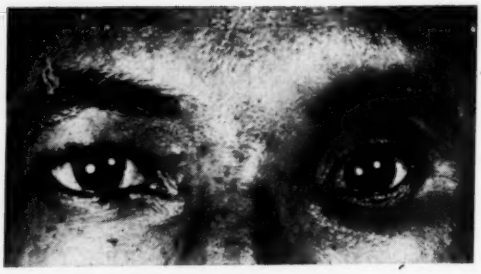

Fig. 1 (DeVoe). Case 1, depressed fracture of orbital floor with intact rim, before cartilage and after sphere implantation.

Fig. 2 (DeVoe). Case 1, after cartilage implantation.

Fig. 3 (DeVoe). Case 2, depressed fracture of orbital floor and rim before operation.

Fig. 4 (DeVoe). Case 2, after cartilage implantation.

tric, than to place it in the geometric center of the orbit. It has been my lot to serve at an end station for sockets which have been difficult to fit with satisfactory prostheses. Many of the patients have had previous attempts made at implantation of spheres; rarely were they centrally placed when I saw them. Frequently, they had migrated inferiorly and forward to such a degree that a painful ledge was formed in the lower cul-de-sac upon which ledge the prosthesis had to rest. At times, it has been physically impossible to insert a prosthesis because of lack of space, and there has been no recourse but to remove the implant. In other individuals, the sphere had migrated up and temporally. Usually, such migrations have produced so much discomfort when an artificial eye is worn that its removal has been necessary. It must be conceded that, in general, delayed implants are not satisfactory. If the artificial-eye makers are consulted they will agree that they would much prefer to fit a socket without implant than one which has had a delayed implant. They all greatly prefer a primary implant at the time of enucleation, however. The delayed implant, properly performed has not, in my experience, been of much help in reducing the sinking of the upper lid. In part, this may be because it is impossible to implant a sphere much larger than 16 mm. in diameter, without its extrusion either anteriorly through the conjunctiva or posteriorly into some other part of the orbit. Such a sphere does not add greatly to the orbital volume. We have nevertheless found this procedure to satisfy some patients, and, since it is a simple one, it should probably be tried in patients who have a small amount of disfigurement. It does not seem to improve the movement of the prosthesis. This depends on the retraction of the conjunctiva and may be present whether an implant is in position or not.

In all cases of a severe apparent enophthalmos, or sinking-in of the upper lid in an anophthalmic socket, it has been found worth while to look for roentgenologic evidence of depression of the orbital floor. Such an injury is not rare,

particularly in the case of war wounds. When such a condition is present, the depression in the upper lid may be entirely obliterated by subperiosteal implantation of cartilage, either preserved or autogenous, in the floor of the orbit (figs. 1 to 4). Preserved cartilage is well tolerated and simpler for the ophthalmic surgeon to use. Several points have appeared to us important: first, the cartilage should be placed as far posteriorly in the orbit as possible, so that in effect it tends to push the orbital content upward and forward; secondly, the cartilage should not be carried to the anterior rim of the orbit. If this is done, it will have a tendency to raise the entire palpebral fissure above that of the other eye. It will further obliterate the inferior cul-de-sac and make the fitting of an artificial eye difficult. An area several millimeters behind the orbital rim should be left free of implanted material. Then there will be sufficient room for the lower rim of the prosthesis when it is inserted. To maintain the cartilage in position and prevent its slipping anteriorly, it may be sutured to the overlying periosteum. At the conclusion of the operation a mold or artificial eye is inserted in the socket and a pressure dressing applied. It is probable that a satisfactory result can be obtained in some patients by this procedure, even though there be no fracture of the orbital floor. I have not, however, attempted this.

If a real cosmetic blemish persists after the delayed implantation of a sphere and the proper procurement of an artificial eye (fig. 5) it may be improved considerably by implantation of dermal grafts in the upper lid.[6] Fat grafts have been found to liquefy and to become absorbed, so that there is practically no change in the appearance of the lid after a few months have passed. I have found, that the former procedure is satisfactory in a small group of cases; also that the defect must be greatly overcorrected at operation, because of the tendency of the implanted material to become absorbed. For donor material, I use the thickest skin easily obtainable; that is, from the back. Two layers of this thick skin are implanted high and superficially beneath the skin of the upper lid. It has been found helpful to suture it into position, as high as possible, in order to prevent its sinking downward, during the immediate postoperative period. To accomplish this, an incision is made about 20 mm. in length just below the brow and the area undermined extensively beneath the skin. In this way, the graft can be placed exactly where desired under direct vision. It can be easily sutured into optimal position. Postoperatively, a rather alarming ptosis may develop, and the defect may appear to have been grossly overcorrected (fig. 6). Within four to six weeks, however, it will be found that sufficient absorption of the dermal tissue will have occurred, so that the cosmetic appearance will be an

Fig. 5 (DeVoe). Case 3, before dermal graft in upper lid.

Fig. 6 (DeVoe). Case 3, three weeks after dermal graft in upper lid.

Fig. 7 (DeVoe). Case 3, three months after dermal graft in upper lid.

improvement over the original condition (fig. 7).

Probably the next most common serious deformity associated with the wearing of an artificial eye is that which may appear rather late after the wearing of any eye for many years. In a few battle casualties, the same condition has appeared within a year after a prosthesis has been worn. This condition is apparently due to a relaxation of the orbicularis muscle and is manifested by a loss of tone in the lower lid, frequently to such a degree as to make the retention of a prosthesis impossible. Bending over to tie a shoe or wash the face, may be sufficient to cause the eye to fall out. I have sent these patients repeatedly to the artificial-eye makers and only after all attempts to produce and retain a satisfactory prosthesis have failed have I resorted to surgery. In the individuals who have an adequate cul-de-sac, but weak lid musculature, I have first tried restoring the muscle tone. This has been done by employing the Wheeler orbicularis-shortening procedure, such as he[7] used for spastic entropion. Instead, however, of taking a band 4 to 5 mm. in width, one at least twice that width is taken, preferably as wide as the entire lid. This has been done in only four cases. Two were successful to a degree that the patient was able to retain his prosthesis in all ordinary activities. Two others were not satisfactory and required further surgical intervention.

When this procedure has failed success has been uniformly attained with the following surgical steps: The conjunctiva is incised about 5 mm. below the lower margin of the tarsus and dissected free superficially upward to the tarsal border. With scissors a lower fornix is dissected exactly as in the manner in which a total-socket reconstruction is made; that is, the dissection is carried behind the orbicularis muscle down to the inferior orbital rim. Three double-arm sutures are then passed through the lower margin of the conjunctival flap, deep through the bottom of the new fornix, passing through periosteum if desired, in the manner described by Weeks,[8] to the skin surface, where they are tied over rubber tubing. A mucous-membrane graft is then taken from the lip or buccal cavity and inserted so as to cover the denuded area in the socket. It is firmly sutured into position with fine silk, and a mold of dental compound placed in position so as to maintain a proper contour of the cul-de-sac. The usual pressure dressing is applied for a week, and the lid sutures are removed at about that time. The conjunctival sutures may be removed on the tenth day, if desired, although most of them will probably have fallen out by that time. One patient had a severe hemorrhage from the socket on the fifth day. To my surprise, the graft took perfectly. It has, however, discouraged any attempt to remove the mold or sutures at an earlier date. These mucous-membrane-lined sockets have been found to be most satisfactory. They are free from objectionable odor and discharge. The Russians[9] have stated that a similar result can be obtained merely by performing the dissection without inserting a mucous-membrane graft. They insert a mold and allow the epithelium to grow downward and cover the defect. I have not attempted this procedure. In some instances, if sufficient conjunctiva remains in the upper

fornix, it is possible to secure an adequate lining for the new fornix by shifting conjunctival flaps rather than by inserting a graft.

Mucous-membrane grafts have not been very popular with ophthalmic surgeons. Spaeth[10] has stated that the only defect in which a mucous-membrane graft should be used is for the correction of conjunctival defects with an intact eyeball. However, I have found the mucous-membrane graft to have its greatest use in reconstruction of a partially defective anophthalmic socket. It matches the palpebral and orbital conjunctiva quite well within a short time and, most important, does not cause offensive discharge or odor. But when such grafts are applied directly to the bulbar conjunctiva, they are deservedly unpopular among surgeons because of their unsightly thickness and color. I agree that they should be used in such position only in extreme necessity.

It has been my experience that skin grafts should be avoided in the socket, if at all possible. In instances of complete socket reconstruction, it is of course impossible to procure enough mucous membrane to line a socket completely. Split-thickness grafts are then in order. In some cases of partial loss of the socket, it has been possible with repeated mucous-membrane grafts to effect a reconstruction. A socket lined partially with mucous membrane and partially with skin is an extremely annoying one to the patient. Discharge is profuse, and ill smelling. Secretion cakes on the prosthesis rapidly, so that its appearance is as unpleasant to the observer as to the patient. Such patients have been grateful for the removal of either the skin or the mucous membrane, preferably the skin, if possible. The criticism may be raised that those skin grafts which produce an unpleasant discharge are too thick and contain secretory elements of the skin. I have seen such sockets, however, in which there has been no evidence of hair growth, but all have had some mucous membrane remaining, usually at the lid margin. If this can be excised and replaced with skin the discharge will greatly lessen.

Comment

The satisfactory installation of an artificial eye depends to a large degree upon the interest and coöperation of the artificial-eye maker. In certain cases, however, even their best efforts will not produce a cosmetically satisfactory result. Then, at times, the surgical measures herein described may find a field of usefulness.

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MEGALOCORNEA*

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Megalocornea has been reported somewhat infrequently, and it is therefore understandable that it is far from completely and undebatably accepted from genetic, therapeutic, etiologic, biomicroscopic, and even nosologic standpoints. It is with an aim at clearing, or at least calling to mind, these still undetermined factors in this interesting, although somewhat rare anomaly, that this single case report is offered.

The patient, a soldier, aged 26 years, came to the eye department for refraction. In the course of the examination the extremely large size of his eyes was most striking. The patient's only eye complaints were of his slight nearsightedness and his poor vision at night. He had worn glasses for the past 15 years, had had his eyes refracted at fairly frequent intervals by optometrists, had noted no rapid progression of his nearsightedness, and had always been comfortable with each change of glasses. He was aware of inability to see at night, for rarely did he venture out alone until his induction into the Army, when this deficiency became much more evident.

The patient's maternal great-grandfather and paternal great-grandmother were cousins. His mother was of German extraction, although born in the vicinity of Odessa. She came to America when only 20 years of age, and married the patient's father, a farmer in North Dakota, who had the same last name. Of this marriage there were seven boys and two girls, and of the seven boys three have "those same large eyes." The oldest male, 45 years of age, was rejected in the last World War primarily because of night blindness and poor general vision. The younger sister's first-born, five years old, also has very large eyes. The patient also relates that one uncle had the very large eyes characteristic of some of the members of the family.

EXAMINATION

Physical examination disclosed a somewhat large and obese adult whose disinterested appearance and general lack of ambition were obvious. There was no motor anomaly, lid nor lacrimal-apparatus disturbance. The cornea of the right eye measured 16 mm. in the horizontal meridian, and 15 mm. in the vertical meridian; that of the left eye measured 16.5 by 15 mm. in similar meridians. The corneas appeared perfectly symmetrical. There was no evidence of scarring of the cornea and no signs of folds, either vertical or horizontal in Descemet's membrane.

Embryotoxon. The lower and upper portion of the cornea of each eye, near the limbus, presented a marked embryotoxon, much more pronounced in the lower portion of the cornea than in the upper. The arcs were incomplete at nasal and temporal ends where they narrowed in typical lunar character. The inferior crescent was separated from the limbus by a thin area of almost clear cornea. No vessels were present in this arcus. With the narrow beam of the slitlamp the embryotoxon was seen to project, or cause the anterior surface of the beam to bulge forward slightly. The buff-gray color of the embryotoxon involved the entire thickness of the corneal substance. There was present just the narrowest possible lucid

* The author has left the country for service overseas, and his author's proof of this paper is therefore not available for corrections.

interval, so that except by retroillumination the arcus appeared to be continuous with the limbus. There was no evidence of "hour-glass" formation, for the entire stroma appeared involved. The arcus of the upper portion of the cornea was different from that of the lower cornea, being crescentic in shape, grayish in color, and it showed an increased corneal relucency. The structure seemed much thinner and resembled an area of the usual and were visible much farther centripetally than is usually observed.

Anterior chamber. The anterior chamber was 7 mm. deep and of equal depth in each eye. When the patient looked down, the deep chamber acted much like a contact lens, making the angle of the chamber readily visible (fig. 2).

Aqueous flare. When the anterior chamber was viewed through a small but intense spot beam after becoming properly

Fig. 1 (Rosen). General overall view of eyes, showing large cornea and arcus senilis.

limbus which had been stretched. Blood vessels ran to the very edge of the grayish arc. This portion of the arcus involved only the anterior corneal structures, the vessels appearing in the most superficial layers of the cornea as an extension of the limbal plexus (fig. 1).

Krukenberg spindle. A spindle of pigment was present upon the inner surface of each cornea, much more prominent in the right than in the left cornea. The pigment extended from pupillary border to limbus at the 6-o'clock meridian in a rather broad mildly dense dispersion. The appearance was not that of a truly characteristic Krukenberg spindle for it was somewhat atypical. The granules were more dense at the mid-portion of the spindle.

Corneal nerves. The corneal nerves appeared to be much more prominent than

dark adapted, a definite Tyndall's phenomenon was present, showing a slight aqueous flare with a very definite granular movement in the convection current.

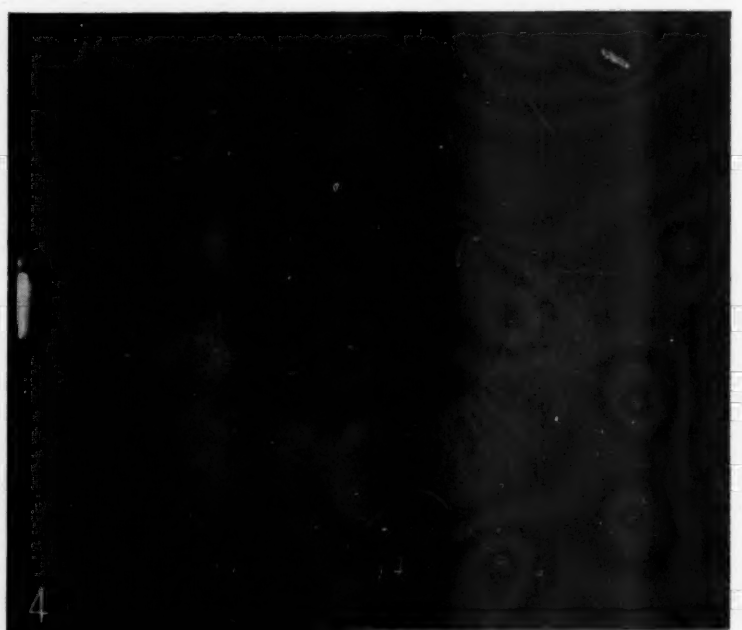
Fig. 2 (Rosen). Slit beam picture shows the great depth of the anterior chamber. White substance in the anterior chamber is a high light.

Iris. The iris was definitely atrophic and undeveloped. Crypts were absent or little developed and there was but little pattern differentiation. Only a slight level separated the lesser from the greater circle of the iris. The color was a faded

Fig. 3 (Rosen). Shows the deep anterior chamber, the arcus senilis, the primitive iris, and the nevi in the iris.

brownish green with no startling nor pronounced iridic hue. Throughout the structure of the iris were many small pigment deposits resembling "freckles" or nevi of the iris (fig. 3). The iris was distinctly mammalian and primitive. Under the high power of the slitlamp the iris stroma had a stellate, rather than a radiate distribution, the center of the individual stellate structure appearing slightly higher than the radiating processes (fig. 4).

Iridodonesis. There was a mild tremulousness of each iris which became most pronounced when the patient looked down. The deepened anterior chamber, of course, emphasized this feature, since its depth acted like a strong convex lens enlarging and intensifying the iris tremor. This iridodonesis was not like that seen in other conditions, such as iridodialysis



Figs. 4 and 5 (Rosen). Show the character of the iris stroma and the peculiar arrangement of the iris nodules.

or dislocated lens, but very much like the iridodonesis seen during an intracapsular-cataract extraction in which there is no vitreous herniation. It was slow, rhythmic, and symmetrical, involving all portions of the iris equally, like circular ripples originating from a stone thrown into the water.

Pupil. The pupils in average daylight appeared to measure 3.5 mm. They dilated readily to 5 mm. in the dark. There was no indication of miosis nor any tendency toward that condition. The most startling pupillary anomaly was the character of the inner "nodules" or accordionlike folds of the pupillary portion of the iris. In each eye these folds were well developed and regularly convoluted from the 9-o'clock to the 3-o'clock position in the upper half of the pupil, but in the lower half they became smaller and suddenly disappeared completely. The pupils dilated readily to an extreme degree with mydriatics. A slight eccentricity of the pupils was present, nasally and upward (figs. 4 and 5).

Transillumination. Upon transillumination light streaked through the iris in a radial manner; no "target reflex" was obtained. The inner circle of the iris also showed an atrophy in the lower pupillary portion of the iris, through which the light came readily.

Tension. There was a definite hypotension with measurement of 9 and 11 mm. Hg(Schiøtz), respectively, in the right and left eyes.

Gonioscopy. When the patient looked down a dense pigment line could be seen running along the angle of the anterior chamber. This line was brownish black, fairly thick, and stippled. It appeared to run completely around the angle where the ciliary body becomes inserted into the sclera. The angle of the anterior chamber was extremely wide and rounded and could be observed without a contact lens.

Lens. Both lenses were dislocated posteriorly in symmetrical fashion, exposing the zonule for a distance of 1 to 2 mm. all around. The lens measured 11 mm. in its greatest diameter. The zonular fibers appeared to be intact all around except in the lens of the left eye at the 8- and 11-o'clock positions, where corresponding notching occurred. An occasional brown pigment granule was deposited upon the zonular fibers. The anterior shagreen of the lens of the right eye was unusually prominent. This lens showed no other abnormality. The lens sutures were not remarkable. In the lower portion of the lens of the left eye, in the oldest portion of the posterior cortex, was a crescentic area of grayish-white clouding resembling congenital lenticular detritus. Just behind these lens opacities in the anterior vitreous were several orange-red opacities fused together in a thin matting and strongly resembling "brick-dust."

Vitreous. The vitreous framework showed definite degenerative features. The usual silky character of the vitreous "curtain" had been replaced by a thin fibrillar substance with many small brown granular particles enmeshed in its framework. There was no gross vitreous disturbance.

Fundus. There was nothing abnormal about the fundi. The nerve heads, maculas, and vessels were all within normal limits.

Visual fields. There was a pronounced concentric contraction (see chart). The patient's dark adaptation was extremely poor.

Color perception. There was a complete red-green blindness.

Discussion

Anderson[1] has stated that "Megalocornea is a matter of a completely healthy eye in a healthy person." It is

with this concept that variance exists, and, accordingly, I have endeavored to point out the many findings which surely appear to be far removed from a "completely healthy eye."

Anderson has reviewed for purposes of differential diagnosis the subject of megalocornea in his inspiring monograph upon Hydrophthalmia. He has shown that these two names have been used interchangeably until recently, the essential differences between these two conditions being evidently unrecognized. As an example, it may be shown that Doggart,[2] as late as 1930, reported a case of "Buphthalmos with normal unaided vision." In this case the cornea measured 13.5 mm. and the findings of the eye examination were absolutely normal. The author emphasized the fact that there were no ruptures of Descemet's membrane, no increased intraocular pressure, normal visual fields, familial tendency, and absence of symptoms. He used the term buphthalmos synonymously with megalocornea. In Anderson's monograph a differential diagnosis has been offered which includes all the features emphasized by Doggart as being signs of megalocornea and not of buphthalmos. Anderson included under his cases of megalocornea a case reported by Law[3] as megalophthalmos. The patient was a man, aged 23 years, who had always had poor vision with the right eye. The globe was described as being enormous and measuring 25 diopters of myopia. The patient had a scar upon the right temple which he stated was the result of a forceps birth injury. The examiner noted a deep (good) anterior chamber and many diagonal folds in Descemet's membrane. Law reported this case as megalophthalmos, but Anderson, because of the tears in Descemet's membrane, regarded the case as one of hydrophthalmia and reviewed and referred to the case as such. It is apparent that these folds in Descemet's membrane are those very characteristic folds found in "Forceps injury of the cornea,"[4] or possibly the so-called "glass membranes" in the anterior chamber following birth trauma. The folds may be present within the corneal substance and need not necessarily extend out into the space of the anterior chamber. One of Lloyd's cases of forceps injury showed a deep anterior chamber, keratoglobus, and folds in Descemet's membrane. I have seen several cases of tears in Descemet's membrane in cases with a definite history of forceps injury and have come to suspect the condition immediately if the folds run in a diagonal meridian. Recently I saw a soldier, aged 28 years, whose left eye was totally blind. He gave a definite history of forceps delivery. There was an injury with scars upon his cornea involving most of the stroma. A glaucomatous optic atrophy was present along with a myopia of over 35 diopters. This picture could be explained on the basis of trauma that caused a proliferation of endothelium seen in the folds of Descemet's membrane. Subsequently, a glass membrane may be produced by the proliferated endothelium, which covers over and predisposes to a complete glasslike covering, lining all structures of the boundaries of the anterior chamber, particularly the trabeculae and the filtration angle. Thus, the outflow of aqueous may be obstructed, producing glaucoma, as recently shown by Reese.[5] This glass membrane lies over the trabeculae and is continuous with Descemet's membrane over the cornea, and sometimes is continuous with a similar membrane existing upon the anterior iris surface. Reese emphasizes the point that the endothelium has the ability to produce a glass membrane in foreign soil under provocation, and forceps trauma may be all that is necessary to stimulate it. Trauma was shown to be

significant in 6 of the 26 cases reported by Reese, especially when monocularity was predominant with respect to the glaucomatous cases. Another important point in Reese's report is the frequency of occurrence of iris atrophy, which could also be dependent upon the formation of a glass membrane.

Vail[6] reported seven cases of anterior megalophthalmos in 1931, emphasizing the fact that the pathologic changes were not limited to the cornea alone, but the condition was an involvement of the anterior segment. The name anterior megalophthalmos was suggested for this condition, but the physical findings do not appear to support the title, for not only should there be an enlargement of the cornea, but enlargement of other structures of the anterior segment. The cornea is enlarged, but is not particularly stretched or rendered thinner. The iris and zonule, on the other hand, both give evidence not of hypertrophy, but of an endeavor to lengthen in order to "stay with" the corneal diameter. There is apparently no true miosis, but rather a small pupil for the size of the iris in which it exists. In the case herein reported, at any rate, the pupil was not miotic and dilatation was accomplished easily enough with the ordinary mydriatics. Vail describes and illustrates a "target" reflex—a manifestation of iris atrophy. A series of lighter and darker circles, one within the other, exists upon transillumination, particularly emphasized at the periphery, for within the circle of the ciliary body a dark ring is described as a dense "straight black line where the ciliary body inserts in the sclera."[7] However, from this point inward there is no striking diaphanous differentiation of concentric circles. Vail stressed the atrophy of the iris in most of his cases, mentioning the absence of iris pigment at the pupillary border. In many cases the margin of the pupil was referred to as being transparent as a "frog egg," but since these cases existed in old individuals it is difficult to differentiate this type of iris atrophy from that of senile iris atrophy. In only one or two cases was the slitlamp available for examination.

Although Kestenbaum,[8] Seefelder,[9] and Kayser[10] have provided sufficient evidence to prove that hydrophthalmos and megalocornea are not one and the same disease, it is evident that their views were not accepted until much later. Papers appearing subsequent to these publications still continued to use the terms buphthalmos and megalocornea interchangeably. The diagnostic criteria have been sufficiently and clearly described so that little difficulty should be experienced in making a differential diagnosis, for there are exact and detailed findings to be observed in all cases of megalocornea and these should be presented in all reported cases.

The biomicroscopic studies of Berliner seem to indicate that the embryotoxon in megalocornea is not a true arcus, but rather a stretching of the limbus, producing opacification of the transitional limbal zone. In the present case, at least, it appears that the arcus in the upper half of the cornea was quite different from that of the lower cornea.

Anderson in quoting Kayser states that it is important to note that Krukenberg spindle is not necessarily congenital in origin, as has been suggested, since in Kayser's case the Krukenberg spindle did not develop until this patient's 23d birthday, and then occurred two years later in his other eye. This reference would lead one to suspect that the condition of megalocornea might possibly be a progressive condition in which one of the characteristic changes is a pigmentary degeneration or dispersion.

The gonioscopic studies of Givner and Troncoso show that the angle of the anterior chamber is wide and round. The ciliary body appears to be drawn back and stretched by the receding iris, which produces the depth and roundness of the anterior chamber. A straight black line is seen where the ciliary body is inserted into the sclera. The iris appears particularly stretched at the ciliary zone. The stretching and atrophy of the zonular fibers produce the iridodonesis.

Anderson states: "If megalocornea is a form of gigantism one may ask: 'Does a peculiar form of growth of the lens or its isolation within its capsule separate it from the ties with the other ocular tissue and free it from the factors making for excessive growth?' " Again one must question such a suggestion for it has not been shown that the lens fails to increase in size. Anderson[12] states that iridodonesis is a frequent sign and its presence suggests a small lens. The case herein reported does anything but support such a conclusion. The lens is not "small" and there is an apparent symmetrical posterior displacement of the entire lens; in other words, the posterior chamber in such an eye is apparently much deeper than is the usual theoretic posterior chamber in which the iris rests directly upon the anterior capsule of the lens. When the pupil is dilated there is difficulty in seeing this spatial separation, but with the slit beam in the undilated pupil there is a very definite spatial gap. This phenomenon was accentuated when photography was attempted, for upon the ground glass a shadow was thrown upon the capsule of the lens as the light passed over the iris, a shadow which could not be seen nearly so well with other clinical methods of examination.

Kayser stated that in a case of megalocornea of 15- to 16-mm. diameter the proportionate lenticular size would be 11.2 by 4.5 mm. Anderson states that such large lenses have not been found by surgeons upon extraction of cataracts. Kayser's patient had a "normal sized" lens. The size of the lens in the present case, both by direct measurement and photometry, seemed to indicate an abnormal size.

It is extremely interesting to note Anderson's and Duke-Elder's comments upon the relationship of megalocornea and arachnodactyly. Anderson[13] states, ". . . This view is strengthened by the common occurrence of Megalocornea in Arachnodactyly: viz, half of 25 cases reported." Duke-Elder[14] states, "Its frequent association with Arachnodactyly may also be significant," and, again, "Megalocornea is sometimes a complication of Marfan's syndrome (Thaden[15]). These are interesting comments for in reviewing Rados's[16] most excellent, exhaustive, and comprehensive work on Marfan's syndrome in which every case in the literature is tabulated (over 200 cases), I have been able to find megalocornea or macrocornea in only three cases. In these three cases is included Thaden's case upon which Duke-Elder makes the assumption that megalocornea and arachnodactyly are frequently associated. Thaden's measurements of the cornea were 13 mm. and 12.5 mm., respectively. This same case had been reported one year earlier as a case of arachnodactyly and megalocornea by another author, Fleischer.[17] In reviewing this same list of cases of Marfan's syndrome five cases of microcornea were uncovered. It seems, therefore, that megalocornea is not a commonly associated finding in arachnodactyly, although I have seen one such case myself.[18]

The theoretic consideration of megalocornea has been extensively discussed. Endocrinologic, atavistic, environmental, metabolic, and hyperplastic factors have

been stressed by various sources. Vail considers the condition a hereditary hyperplasia followed by a disease process. Waardenburg,[19] in discussing sex chromosome characters, linkage, and "crossing over," states that the genes concerned with the size and refraction of the cornea are probably distributed over several chromosomes in man, and if this assumption is true, it may be inferred that seemingly similar clinical syndromes or signs scarcely distinguishable from each other may be due to different genes. Waardenberg lists several isolated case reports under sex-linked inheritance in which is included megalocornea, progressive night blindness, and hypoplasia of iris stroma, associated with ectopic pupil, all of which have been encountered in the present case report. The outstanding example of sex-linked inheritance is partial color blindness, and in the present case, again, this is a prominent feature. It seems, therefore, that this single case report would support the theory advanced by Vail; namely, that megalocornea is a hereditary sex-linked condition followed by a disease process.

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NOTES, CASES, INSTRUMENTS

A NEW MODEL OF CONTACT GLASS FOR GONIOSCOPY (GONIOLENS)*

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The Koeppe contact glass A and the regular gonioscopic glass C have been used by all observers of gonioscopy with good results, both from the optical standpoint and the facility of application, with the patient lying on his back. Still, they have some drawbacks which are, in particular, the weight of the glass and the fact that it fits between the edges of the lids where nervous or difficult patients can squeeze it and push it out by the contraction of their lids. Another drawback is that patients not willing to submit to the examination try to escape by moving the eyeball up, down, or laterally under the glass. These movements may cause abrasions of the cornea due to the rubbing of the membrane against the inner edges of the contact glass. Also, lateral movements of the eye bring air bubbles under the glass, making it necessary for the observer to stop the examination and proceed to refill the cavity.

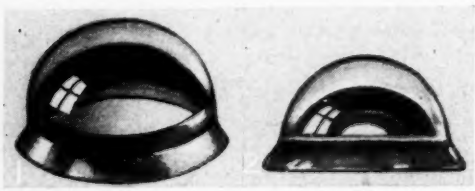

Fig. 1 (Troncoso). New contact glass for gonioscopy. Regular size. Figure 2, small size for narrow-lid apertures.

The new contact glass avoids these difficulties in part because it is applied directly over the sclera and the lids have no hold on it (fig. 1). Its inner curvature has the dimensions of an average normal cornea and is similar to those of the regular gonioscopic glass. Its upper part has a hemispherical shape and ends in a flange which holds to the sclera around the cornea. This glass gives clear images of the angle with great definition and practically no astigmatism. Its magnification is about 2×. The field of observation is a little smaller than that of the regular contact lens. However, this is not important, for the observer moves around the eye when using my new model of monocular or binocular gonioscope.

The new contact glass can be applied with the patient either sitting up or lying down. In the first case the observer uses a small suction cup which is moistened and fixed by compression upon the upper curvature of the glass. This is then turned upside down and filled with distilled water, a buffer solution, or, better still, the 1-percent solution of methylcellulose recommended by Swan.[1] The operator directs the patient to lower his head and to raise with his finger the upper lid as much as he can. Holding the contact glass in a horizontal position, the operator pulls the lower lid down and pushes the contact glass firmly against the cornea. With a little practice, no air bubbles will remain between the glass and the cornea. The patient's head is then raised and tilted against the wall or back of the chair for examination of the angle all around with the gonioscope.

When the patient is lying on his back, the maneuver of applying the glass is the same as for the regular lens. The glass is held between the thumb and index finger of the right hand while the

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left raises the upper lid. The glass is slid under the lid and then is pushed down upon the cornea, while pulling the lower lid down. The space over the cornea is filled by using an ordinary hypodermic syringe provided with a curved needle, similar to the one used for irrigation of the lacrimal sac. In order to remove all air bubbles the patient is directed to turn his head to the side while distilled water or Swan's methylcellulose (methocele) solution is injected with the syringe. To facilitate the injection, the flange of the glass has a small notch where the tip of the needle can be inserted. To obtain a good hold over the sclera when the glass is filled, the operator places it at the proper place over the center of the cornea and applies a slight pressure for one or two minutes until the flange stays at the scleral limbus. In this position it follows the movements of the eyeball without discomfort to the patient.

To facilitate the proper application of the glass in unruly or timid persons, the patient is directed to look with his other eye at either his own finger placed in front of that eye or a source of light. The operator may also close the lids upon the contact glass and wait a few moments till all is calm. In this instance, when the eye is opened again, the operator must cleanse the glass with a wetting agent before proceeding to the examination of the angle.

It may be objected that the Koeppe glass by keeping the lids apart makes the examination easier. However, almost all patients when they feel the strange object between their lids tend to contract the latter and to struggle. With the use of the goniolens there is no struggle, and it is easy to have the patient keep both eyes open. The eye under the goniolens can be moved without interfering with the optical image.

Removing the glass is more difficult than applying it, as it usually adheres to the sclera. The best way to remove it is to direct the patient to look inward toward his nose, and when the edge of the glass comes in view the operator inserts the tip of the needle under it, taking care that this is parallel to the surface of the sclera in order to avoid hurting the eye. The tip of the needle raises the glass a little and air penetrates beneath, making the extraction easier.

This new contact glass has been named a "Goniolens" to distinguish it from the regular glass.* It is made of a special plastic, called "acrylic," which is light in weight and unbreakable. There are two sizes of this contact glass, the regular and a small one for narrow palpebral apertures.

Of late, I have been using a new wetting agent for cleaning the lenses, called Phemerol (Park Davis & Co.). A 1:1,000 dilution has given good results.

630 West One Hundred Sixty-eighth Street.

* The new gonioscopic lens is made by the firm of T. E. Obrig of 49 East 51st Street, New York City.

Reference

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OCULAR SENSITIVITY TO BUTYN*

ALBERT C. ESPOSITO, MAJOR (MC)
Chillicothe, Ohio

The use of butyn sulfate (p-aminobenzoyl-disbutylaminopropanol sulfate) as a local anesthetic is an established practice. Chemically, it is a normal sulfate of a base resembling the base of procaine hydrochloride, differing, however, in that the butyn base contains a butyl group in place of the ethyl group, as found in the procaine base, and a propanol group in place of the ethanol group.[1]

The Section of Ophthalmology of the American Medical Association, in February, 1922, reported that butyn sulfate could be used successfully in practically all operations on the eye. It was found that a 1-percent solution of this drug was more effective or efficient than a 1-percent solution of cocaine hydrochloride and just as effective as a 1-percent solution of phenacaine hydrochloride (holocaine). The committee report at that time stated that butyn sulfate was more powerful than cocaine in view of the fact that a smaller quantity was required for the same action because it acted more rapidly than does cocaine and that this action was prolonged and less toxic in the quantity required as compared to that of cocaine. The committee further found that butyn sulfate was superior to cocaine in that it produced no drying of the tissues and no change in the size of the pupil and that no ischemic effect was produced.

In view of these findings, this drug has had wide acceptance in various fields, including that of ophthalmology, and has been used by the writer for some time. In all this time, there has been adequate anesthesia and no unusual reaction until a short time ago when the following observation was made:

Case report. E. W., aged 49 years, a white man, was sent to the Eye Clinic on May 6th, because of complaints referable to his right eye. The patient stated that he saw a halo around lights and that some generalized pain in the eyeball itself was almost continually present, especially in the evenings. He was seen in the Eye, Ear, Nose and Throat Clinic at 3:00 p.m. The results of a routine examination were as follows: There was no exophthalmos, no enophthalmos, no lagophthalmos, nor ptosis. The lid borders were normal in appearance. The palpebral and bulbar conjunctiva showed a normal amount of injection. The caruncle was normal in appearance and position. The lacrimal apparatus showed no abnormalities. The cornea was entirely negative for opacities, being clear in its entirety. The anterior chamber was normal in depth, and the iris showed the same bluish pigmentation bilaterally, no abnormalities being observable. The pupils were equal in size, round, and reacted readily to light and accommodation. The media were clear. There was mild physiologic cupping of the discs. A small scleral crescent along the temporal margin of both discs was noted, and the vessels showed increased tortuosity. Manifest vision was: O.D. 20/20−1; O.S. 20/40+2. Retinoscopic (manifest) O.D. +0.50D. sph. ⊂⊃ +0.25D. cyl. ax. 55°; O.S. +0.25D. sph. ⊂⊃ +0.37D. cyl. ax. 65°, which could be corrected to 20/20. The patient read J4 with this correction. With +1.50D. sph. added, he read J1. Ocular muscle coördination was normal.

The patient had not used any medication, nor bathed his eyes, nor washed his face since early morning. Due to the complaint of halo around lights and generalized pain in the eyeballs proper, a tonome-

* Published with permission of the Medical Director, Veterans Administration, who assumed no responsibility for the opinions expressed or conclusions drawn by the author.

ter reading was indicated. Therefore, a few drops of 2-percent butyn sulfate were instilled in each eye and approximately 15 minutes later the tonometer reading was made: 17 mm. Hg (Schiøtz). The patient was dismissed at 3:30 p.m. and returned to the ward.

According to his statement, at about 4:15 to 4:30 p.m., his eyes began to feel itchy. He did not complain of this, had his evening meal, and returned to the ward. At approximately 6:00 to 6:30 p.m., the patient stated that his eyes began to water excessively and he could not look at the light, as it seemed to bother him. That evening it was noted by the ward attendants and the nurse that the patient had some slight swelling of the eyes. The O.D. was called and cold compresses were prescribed. The next morning he was immediately seen by the ophthalmologist and at that time the following changes were present:

There was a bilateral marked edema of both the upper and lower lids. A marked blepharospasm with photophobia was noted when light approached the eyes, as by the ophthalmoscope and indirect illumination. The palpebral apertures were extremely small and there was excessive lacrimation. The bulbar and palpebral conjunctiva showed marked injection. There was no involvement of the cornea, and the interior of the eye appeared normal.

The conjunctival sacs were irrigated with boric solution containing 1 to 1,000 adrenalin, and tepid compresses were prescribed. At the same time a Patch test with butyn sulfate was made in view of the fact that this occurrence seemed to have its onset subsequent to the instillation of this drug into the eyes, as described. A few hours later, the patient stated that there was some relief as the result of this treatmnt. The irrigations were continued at intervals of four hours during the day, and the edema gradually subsided. The patient stated that all during the previous night he had felt as though there was sand in his eyes. It seemed as though he could feel his eye "blooming out." With this therapy, the condition subsided rapidly and on the third morning the eye appeared almost normal. There was no rise in tension at any time and, in general, no other undue symptoms were noted. The Patch test was extremely positive for butyn sulfate within the 48-hour period.

Discussion

This case is reported because of the subsequent reaction which occurred following instillation of butyn sulfate for local ocular anesthesia. In Lundy's[2] article on local anesthesia it is stated that butyn sulfate is a good surface anesthesia in 2-percent solution, and that, further, "in the use of butyn one should be on guard for idiosyncrasy, since occasions have developed when it seems that the patient was hypersensitive to butyn." The literature revealed, however, only the following four cases of butyn sensitivity: In 1927, Lemoine,[3] of Kansas City, Missouri, and Newton,[4] of Dallas, Texas, each reported a case of conjunctivitis and dermatitis due to butyn sulfate, each confirmed by skin test. In May, 1933, Ralston and Payne[5] reported a case of local anesthetic with lid edema as the dominant symptom. In 1939, Parkhurst and Lukens[6] reported a case which started as a sty in the upper lid; 2-percent butyn was used as a local anesthetic, and then edema and vesiculation occurred due to the drug. Further confirmation that only four such cases have been reported thus far was received in a personal communication from Dr. J. F. Biehn.

The case is of interest not only from that angle, but because of a chronologic sequence of symptoms after the use of

butyn. It is shown that primarily the patient felt a local irritation with subsequent lacrimation, photophobia, and marked blepharospasm. Edema developed early and was at its peak when the patient was seen the following morning, as was also the conjunctivitis. From a treatment standpoint, it is believed that moist tepid compresses and irrigations of boric-acid solution containing drops of 1:1,000 adrenalin solution do hasten the recovery from this condition.

Since this case was observed, the writer has had occasion to use neosynephrin, 10-percent ophthalmic, for patients showing edema of the lids such as one sees in cases of angioneurotic edema and edema associated with hordeolum and other lid infections. It has been used after a local anesthesia had been applied topically to the area, then a few drops of neosynephrin have been placed on the lid, and the finger was used to spread gently and massage the medication over the lid. In almost all cases in which this medication has been used, there has been a rapid and almost complete reduction of the edema within a 15 to 30-minute period. This medication is also used as a powerful miotic in iritis and associated infections where there are adhesions, but it is believed that it also has its use in local edema of the lids.

Conclusion

1. A case of ocular sensitivity to 2-percent butyn-sulfate solution is reported when used as a local anesthetic in the eye, as manifested by conjunctivitis and edema of the lids.

2. It is not a common occurrence, for only four other cases have been reported in the literature since the use of this drug began.

3. Recovery was uneventful after the application of moist tepid compresses and irrigations of boric-acid solution containing drops of 1:1,000 adrenolin solution. Neosynephrin, 10-percent ophthalmic, can also be used for chemosis of the lids.

Veterans Administration.

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SOCIETY PROCEEDINGS

EDITED BY DONALD J. LYLE

ROYAL SOCIETY OF MEDICINE

SECTION OF OPHTHALMOLOGY

October 13, 1944

MR. P. E. H. ADAMS, *president*

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NOTES ON GLAUCOMA

MR. P. E. H. ADAMS gave the President's Address on this subject. He said that in the course of over 40 years of private and hospital work he had come across a great variety of types of this disease.

It is difficult to decide when the disease really starts. He had seen several cases in which one had had suspicions of the discs and kept these eyes under observation. After 15 years the tension became elevated and Bjerrum's scotoma began and the discs looked more pathologic. He quoted one case which was typical in each class.

HINGE-FLAP SCLEROTOMY DRAINAGE OPERATIONS

SIR RICHARD CRUISE showed three cases as typical results of his method for the relief of elevated tension in the hope that they would interest members who were not entirely satisfied with their results in other operations for chronic glaucoma.

The principle he aimed at was to establish a permanent filtrating cicatrix without excision of any tissue.

To attain this the incisions were deliberately prevented from normal healing by connective tissue, to enable the endothelial cells lining the anterior chamber to proliferate into and round the margins of the incisions, so that when healing did take place the cicatrix was formed of endothelial and connective-tissue cells. The margins of the hinged flap were prevented from sealing down by massaging the aqueous out of the anterior chamber underneath the conjunctival flap, thereby causing the corneoscleral hinge flap to ride up under the conjunctival bulge. It was essential to do the first dressing and manipulation 18 to 20 hours after the operation, otherwise the incisions might be firmly healed.

He had been practicing this method, with modifications of technique, for 25 years, and the results were extremely satisfactory. There was minimal damage to ocular tissue, and complications were negligible. Cataract, iritis, hemorrhage, delayed formation of anterior chamber, and late infection did not occur.

Last year, for the first time, after 25 years of experience of the operation in private and in hospital cases, an eye had been obtained *post mortem* for examination, and his colleague, Mr. E. Wolff, with some very good sections, had substantiated by histologic proof the correctness of his previously published presuppositions.

Discussion. Mr. Williamson-Noble asked whether the patients were put on pilocarpine after the operation.

Sir Richard Cruise said that with confidence atropine was instilled for the first week to insure as far as possible that all filtration of aqueous should take place through the incisions and not through the normal channels.

Mr. Eugene Wolff said that an effort

had been made for some 12 years to obtain a section of an eye operated on by this sclerotomy method. There was never occasion to remove one of these eyes from the living patient. Eventually a patient who had been operated on some years before died, and the eye was obtained and sent to the laboratory. There could be no doubt that the track was lined with endothelium. It was usually stated that following an operation no such lining took place, but in this case the lining was obvious.

Familial corneal dystrophy—three cases

Mrs. V. M. Attenborough said that she saw three sisters in this family for the first time in 1943. These cases, she thought, belonged to the group which was classified as granular corneal dystrophy, a dominant disease affecting both males and females. The opacities, which were always bilateral, occurred as discs or rings situated beneath the epithelium in the axial region of the cornea.

The eldest was 24 years old, with onset at about 18 years. The vision in each eye was 6/9. The second patient was 20 years old; onset at 13. The vision in each eye was 6/24. The youngest was 14 years old; onset at 11. The vision was 6/24 in each eye. The rings were present in all three cases, but were most marked in the second of the three patients. She thought that the fact that the onset in the eldest girl had not been noticed until she was 18 was probably due to the fact that her vision was better. The opacities for the most part lay beneath the corneal epithelium and Bowman's membrane, but some also lay deeper in the corneal substance. The father, grandmother, and great grandmother were known to have been affected.

Retinal detachment with elevated tension

Mr. H. G. W. Hoare, by courtesy of Mr. Stewart Macky, presented a man, aged 42 years, apparently in good health. Fourteen years previously, while sawing wood, a three-inch cube flew up and struck him in the right eye. The vision was hazy for three days, but there was no bleeding from the eye, nor was there a black eye. He was attended by the factory nurse but did not seek medical advice. Three months later he noticed waviness in the vision of the right eye, first observed while at rest after his day's work. He consulted an oculist who prescribed glasses. The sight of the right eye gradually deteriorated, the central vision being lost before the peripheral vision. He was quite blind after two years; that was over 12 years ago. He had never had pain in the eye, nor had he had any trouble with the other eye. Six weeks ago he underwent a medical examination for the Army and was asked to seek a specialist's opinion.

The vision at that time was L.E. 6/6, with correction; R.E. inability to see light. The pupil of the right eye was inactive to light, but reacted briskly consensually. The tension was ++. There were slight posterior cortical lens changes, otherwise the media were clear. There was a complete shallow retinal detachment which was not wavy, no hole was seen and no new growth. The disc was markedly cupped.

Hemorrhagic Coats's disease

Mr. H. J. B. Goldsmith presented a 10-year-old boy. It was noticed that the vision of the right eye was defective in November, 1943. There was nothing in the family history nor in the personal history except an attack of whooping

cough in March, 1943. Nothing abnormal was found in the general physical examination. A skiagraph of the chest showed increased hilar striation, thought to be a legacy of the attack of whooping cough in 1943. The Wassermann reaction and Kahn and Mantoux tests were all negative, and the blood count was normal. In the right eye there was a total retinal detachment, and the surface of the retina was covered with glistening bodies, probably cholesterol crystals. In the lower temporal quadrant there was a massive retinal exudate on the surface of which there were multiple punctate and diffuse hemorrhages. The vessels in this region showed many varicosities. The case seemed to be an example of the first group into which Duke-Elder classified Coats's disease.

Discussion. Mr. R. A. Greeves agreed with the diagnosis. The varicosities were commonly seen and were characteristic of Coats's disease. He did not therefore agree with the suggestion of another speaker that the condition might be due to whooping cough.

Mr. Goldsmith, in reply to questions, said that the patient had been under observation for only a fortnight, but that the whooping cough was in March, 1943, and the defective vision was not noticed until November, 1943, although it might have existed before that.

Loose flocculus in anterior chamber

Mr. Victor Purvis presented a man, aged 20 years, who had noticed a loose-floating black spot in his right eye. He was found to have a loose spherical piece of material in the anterior chamber of the right eye, about 1 mm. in diameter, which could be displaced in the anterior chamber to any point desired. It was seen on the back of the cornea when his head was forward; if he held his head back, the piece of pigment floated on to the iris or lens. The iris and pupil were normal, but this piece of material looked like a ball of pigment under slitlamp examination, and could only be assumed to be a congenital abnormality. It did not interfere with vision in any way, and the patient felt no pain, but it was now causing some functional worry. Mr. Purvis had not heard of nor seen any similar case where the pupillary margin was normal.

Discussion. Mr. C. B. Goulden said that he had seen a number of these cases. They were cysts of the pupillary marginal pigment.

Mr. Frank Law endorsed this opinion. He recalled a case, seen a few years ago, which he had examined under the slitlamp and had come to the conclusion that it was cystic.

Glass in anterior chamber

Mr. Victor Purvis presented a woman, aged 54 years, who had a piece of glass in the anterior chamber. An attempt had been made to remove it and the question was whether another attempt should be made. Under the capsule of the lens, a movement of soft lens matter was visible under the slitlamp. One assumed that the soft lens matter was mobile and that the case was becoming morgagnian. Mr. Purvis could not remember having seen such mobility before.

Discussion. Mr. W. E. Heath, who was associated with Mr. Purvis in this case, was asked what was the technical difficulty in removing the piece of glass. He said that the glass was lying in the angle of the anterior chamber at about the 6-o'clock position. He inserted a keratome into the angle of the anterior chamber and hoped to remove it, but there was a certain amount of wedging between the lens and the cornea, and he was un-

able to make the extraction. He then tried to do an iridectomy, but the glass prevented him from getting an effective hold of the iris. Asked how long the glass had been in the eye, he replied that the time which elapsed between the case coming in and the attempted operation was 10 days.

Mr. Frank Juler referred to a case in which he had removed a splinter of glass which was free in the anterior chamber. He had made an incision as for Saemisch's section, with the patient facing and looking downward; the ensuing aqueous drip carried the splinter into the section, where it was easily picked out after the patient had resumed the usual position on his back. In a similar case recently he had improved upon the technique by making a puncture with a broad needle in the usual position; the patient was then turned over so that he looked downward; a touch on the cornea released the aqueous, and the foreign body was recovered from the lower fornix. In this case the minute body was of a nonmagnetic metal.

Dr. John Marshall suggested that in a case of nonmagnetic foreign body in the eye a corneal section downward, such as Dr. Traquair employed in his intracapsular extractions, gave a good approach to the angle of the anterior chamber. A stitch was placed in the conjunctival flap and the cornea turned upward so that the major portion of the iris was exposed, and the foreign body could be extracted by blunt forceps with ease.

Persistent pupillary membrane

Mr. Victor Purvis presented a gross case of persistent pupillary membrane with strands coming forward and attaching themselves to the back of the cornea.

Massive exudative retinopathy

Mr. Victor Purvis presented two contrasting cases of exudative retinopathy, one in a woman, aged 43 years, and the other in a woman, aged 69 years, which is the more usual age for such cases. The right eye in the second case gave a clue to the cause, showing an early central degeneration. The left eye showed an extraordinary mass which looked at first like a neoplasm and, in fact, had been so diagnosed, but the picture taken as a whole, with the hemorrhages, confirmed the diagnosis of exudative retinopathy.

The first case showed a central white mass under each retina. This patient was otherwise perfectly healthy.

CHICAGO OPHTHALMOLOGICAL SOCIETY

December 11, 1944

Dr. Samuel J. Meyer, *president*

Choice of the fixating eye

Dr. James W. White presented a paper on this subject.

Clinical meeting

(Presented by The Illinois Eye and Ear Infirmary)

Hereditary anterior megalophthalmos

Dr. David Horwitz presented a man who complained of failing vision of two years' duration. He said that in 1915 his vision was 20/30 in each eye; that since birth he had had "enlarged pupils." There was no history of a similar condition in the family.

Right Eye. The vision was 6/200. The cornea was of normal thickness, but markedly enlarged (horizontally 13.5 mm., vertically 13 mm.). Marked arcus

senilis was present. The pupil was 3 mm. in diameter and reacted sluggishly to light; under neosynephrin it dilated to 5 mm. The anterior chamber was very deep and optically empty. The iris, which was grayish blue in color, showed marked atrophy of the stroma, with the posterior pigment layer shining through. Marked iridodonesis was present. The lens was tremulous, appeared to be of normal size, and was subluxated backward above. It showed advanced cortical and nuclear cataractous changes. There was a good red reflex without fundus details.

Left Eye. The vision was 20/200. The cornea and anterior chamber had the same appearance as in the right eye. The pupil was 8 mm. in size and did not react. The iris showed extreme atrophy and a moderate degree of iridodonesis. The lens was tremulous, subluxated downward and backward; it had a moderately advanced posterior saucer-shaped cataract with superimposed nuclear changes. A line of pigment was deposited superiorly in the recessus hyaloideo-capsulare. The vitreous showed a moderate number of opacities; the disc was normal.

Gonioscopy showed abnormally wide angles in both eyes, with very heavy trabecular pigmentation. In the depth of the angle the ciliary body was covered by uveal meshwork, which also lined the root of the iris. Intraocular pressure was R.E. 13 mm., L.E. 9 mm. Hg (Schiøtz). Ocular rigidity was low. A cataract extraction on the right eye will be performed in the near future.

The term hereditary anterior megalophthalmos was suggested by Vail in 1931. He annotated 69 cases, in 27 of which lens opacities developed. Cataract operations were performed successfully in 12 out of 18 cases; in 11 of these the lens was delivered on the spoon or needle. To these can be added another case reported by Dr. Hugh C. Donahue (Amer. Jour. Ophth., Sept., 1944) in which successful bilateral cataract extractions were carried out.

Mikulicz's disease

Dr. James Walsh said that this woman, aged 59 years, complained of a chronic sensation of irritation in both eyes. She had noted gradual development of symmetrical swellings in the upper eyelids, and in the parotid and submaxillary regions during the past year. She thought she was in perfect health and had lost no weight.

There was fairly hard, indolent enlargement of the lacrimal, parotid, submaxillary, superficial cervical, axillary, and inguinal glands. Liver and spleen were of normal size, and no masses could be felt in the abdomen. The cytologic condition of the circulating blood was normal, and sternal puncture showed a somewhat hyperplastic marrow. Histologic study was made of a piece of the left submaxillary gland and of a lymph node. In the sections of the salivary gland, some of the glandular tissue had been replaced by wide irregular areas made up of a hyalinized substance, the staining qualities of which were not quite those of colagen nor of amyloid. Scattered within this material were cellular infiltrations of round cells, monocytes, and cells resembling the Sternberg-Reed type. The sections of the lymph node were overrun by cells of the lymphocytic type. The histologic diagnosis was lymphoblastoma. Under X-ray therapy the glandular swellings receded.

Malignant cardiovascular hypertensive disease

Dr. Theodore C. Zeman said that a 19-year-old boy was seen in the clinic on November 24, 1944. He complained

of blurred vision associated with headache. This condition had begun only 10 days previously and had advanced so rapidly that he was almost unable to get around by himself. He said he had been in excellent health until the onset of visual symptoms.

On examination he appeared somewhat ill and had to be assisted to a chair. Vision had become so poor that he could only count fingers at one foot with the right eye and at six feet with the left eye. The fundi revealed marked arterial constriction with retinal edema. The veins were engorged, and the entire posterior pole was covered with cotton-wool patches. A few flame-shaped hemorrhages were visible. There was beginning blurring of the nasal margins of both discs.

His blood pressure was 200/150. Urinalysis showed 3+ albumen, red and white blood cells, and granular casts.

The following day the patient complained of mild dyspnea associated with nausea. The heart rate was 84, rhythm regular, the borders were within normal limits and no murmurs were heard. On auscultation, fine crepitant rales were heard over both bases. On the second day after admission, the dyspnea became very marked and the sputum somewhat rusty, and the patient appeared acutely ill. The rales over both bases were more marked and some dullness was elicited on percussion. It was obvious that he was undergoing acute cardiac decompensation, and he was transferred to Cook County Hospital. Venesection was performed and the patient died the following day. Autopsy was not permitted.

This young patient had a fulminating type of malignant hypertensive cardiovascular disease, the first subjective sign of illness being failure of vision. He died of cardiac failure three weeks after the onset of these symptoms.

Detachment of retina

Dr. Stanley Swiontkowski presented a man, aged 37 years, who stated that on September 1, 1943, he became conscious of "gold rings" in front of the left eye followed by a curtain rising from below. Central vision, which previously had been excellent, was markedly reduced. When seen two months later the vision was R.E. 20/20; L.E. ability to count fingers at 2 feet. An almost complete retinal detachment with numerous folds was found. The macular area was obviously detached; no tears were seen.

The patient was put to bed, given pinhole glasses, and the retina flattened gradually. Five weeks later two tears were found located 1 disc diameter anterior to the equator at the 10:30-o'clock position. These linear tears had been hidden between two retinal folds. One week later operation was performed, using the 0.5 mm. Kronfeld needle, followed by several drainage punctures. The postoperative course was uneventful, and the patient was discharged three weeks later.

When he was last examined the retina was attached. Corrected vision in the left eye was 20/20−2. Peripheral and central fields of vision were normal. There was a definite change in pigment distribution about the macula. The only complaints were those of micropsia and metamorphopsia.

This case presented the interesting feature of an almost complete return of function of the macula, although it had been detached for at least eight weeks.

Malignant melanoma of the choroid

Dr. Benjamin Lyons said that this patient, a Negress, aged 28 years, noticed diminished vision in the left eye two weeks prior to admission. The external findings were normal in both eyes. The

tension was normal. The vision was R.E. 20/20, L.E. 20/200. In the left eye the infero-nasal quadrant of the retina appeared raised in the form of a semispherical solid hump which sloped more gradually toward the ora serrata than on the other three sides. Over the posterior portion of the hump the retina was completely opaque, whereas through its anterior portion a grayish-brown mass was visible directly underneath the retina. Transillumination of the latter portion showed a distinct shadow. The inferior retina adjacent to the hump was shallowly detached. The clinical picture was thought to be characteristic of a malignant melanoma of the choroid.

Sphenoidal-ridge meningioma en plaque

Dr. Paul Lambrecht presented a man, aged 52 years, who complained of progressive painless proptosis of the right eye and mild tearing. Three years ago he had received a blow over the right eye sufficiently forceful to stun him. No immediate ill effects were noted. About a year ago he consulted his family doctor about a slight prominence of the right eye and was referred to an eye specialist.

There was an irreducible exophthalmos of the right eye, which was 10 mm. anterior to the left eye as measured by the exophthalmometer. A firm, smooth, nontender mass was located in the right temporal region, measuring 3 by 5 cm. and definitely elevated. The overlying skin was freely movable. There was no palpable pulsation nor audible bruit.

The vision in each eye was 20/20 uncorrected. External ocular movements were normal in all directions. Peripheral and central visual fields were normal. Postero-anterior and lateral X-ray films of the skull showed marked density and thickening of the right sphenoidal ridge and of the roof and lateral wall of the orbit and middle fossa.

The case was presented as the typical picture of a sphenoidal-ridge meningioma en plaque.

Tuberculous keratitis

Dr. Henry Ricci presented a woman, aged 48 years, who was seen for the first time in April, 1942. She complained of blurred vision of the left eye, photophobia, redness, and foreign-body sensation of two weeks' duration. The vision was R.E. 20/20, L.E. 20/200. The cornea of the left eye showed a round, gray infiltration about 3 mm. in diameter, located deep in the center of the cornea. General medical examination and laboratory tests including Mantoux test were negative. The patient was put on a regime of heat, atropine, and typhoid vaccine. There was an almost complete recovery in six months. The vision returned to 20/70.

The eye remained quiet until September, 1944, when the symptoms recurred with more severe pain. There was a deep central keratitis extending to about 1 mm. from the corneo-scleral margin nasally and 3 mm. from the margin in all other meridians. Descemet's membrane showed marked folding. There was a slight secondary iritis. The vision of the left eye was perception of hand motion at 2 feet. The tuberculin test made with 1:100,000 dilution of protein purified derivative was negative, but the 1:10,000 test showed 4+ reaction. A chest plate was normal as were temperature curves. General physical examination was noncontributory.

The eye remained irritated, and the lesion became more densely infiltrated with an abundance of deep and superficial vascularization. Two months after onset, the vessels had penetrated to the center of

the infiltration. In the following few days the center of the infiltration sloughed off, leaving a small descemetocele, about 2 mm. in diameter, just nasally to the center of the cornea. The following day the first of three weekly X-ray treatments, consisting of 60 roentgen units, was given. The descemetocele covered over rapidly and three weeks later the eye was almost pale. The corneal lesion continued to regress, leaving a dense central leukoma.

This was a case of deep keratitis of probably tuberculous etiology. It presented the typical chronic, recurring course of deeply infiltrating, partly necrotizing lesion without any demonstrable focus of infection elsewhere. The part played by the X ray in the healing process was purely hypothetical.

Atypical coloboma of the choroid

Dr. Albert A. Baraff said that a nine-year-old boy came to the clinic without any specific complaints regarding his eyes. The vision was 20/20 in each eye without correction. The fundus of the right eye showed a coloboma of the choroid, nasally and below. The defect was contiguous to the optic disc, which was markedly elongated obliquely at a 45-degree axis. The edges of the coloboma were sharply marginated and pigmented. The floor was considerably depressed below the level of the rest of the fundus. The inferior nasal retinal vessels were seen crossing over the coloboma without any marked dipping at the edges of the coloboma. Its floor was covered by a layer of large choroidal vessels.

The coloboma was of the bridge type, an isthmus of relatively normal fundus separating a large central defect from a smaller peripheral one. The latter did not extend to the visible periphery.

The vision of 20/20 was not incompatible with the extensiveness of the lesion. Central vision is not generally affected when a coloboma is inclined nasally. The central field showed a scotoma, which was consistent with the clinical picture.

Fuchs's corneal dystrophy complicated by senile cataract

Dr. Valentin Ramirez presented a Negro, aged 49 years, who had been under observation for almost three years. He complained of gradual diminution of vision and short episodes of redness and irritation of both eyes.

The classical picture of a bullous epithelial dystrophy was seen, associated with a marked cornea guttata. Senile lens opacities had been developing slowly. Visual acuity was 20/200 in each eye. A contact lens improved vision to 20/70+. Since rapid progression and exacerbation of the corneal disease had been reported after cataract operations in such cases, it was decided to temporize by prescribing contact lenses.

Luetic tarsitis

Dr. Joseph S. Haas said that a man, 54 years old, was seen for the first time on November 30, 1943. He complained of a red, painful left eye which had troubled him for two weeks. The condition began as a small pimple on the lower lid margin which increased in size and then broke down to discharge a thick yellowish secretion. There was a history of blunt injury to the eye three years previously and a syphilitic infection at the age of 24 years.

The upper and lower lids were reddish-purple in color. There was diffuse edema and induration, most marked over the tarsi. About 3 mm. temporal to the inner commissure, a dirty necrotic ulcer about 3 by 3 mm. in size, with a firm, indurated base, was located in the lower lid. From this ulcer exuded the thick discharge. The

regional glands were not involved. Cultures of the discharge showed hemolytic Staphylococcus albus. Repeated blood Wassermann tests and dark-field examinations were negative. Consultations with the departments of dermatology and otolaryngology were noncontributory.

A biopsy specimen was taken from the floor of the ulcer, approaching it from below, the pathologic report on which stated there was round-cell infiltration with perivascular infiltration and a large amount of inflammatory hyperplasia. Following the biopsy examination the ulcer granulated in from the bottom, but the swelling over both lids persisted and a localized indurated area developed in the upper lid.

All conventional forms of treatment were ineffective, including sulfonamides administered locally and internally over long periods; potassium iodide; X-ray therapy; local penicillin medication. The patient was seen at intervals of about a month, but there was practically no change in the condition of the lids. At each visit a routine blood Wassermann test was made, and in November, 1944, one year after the patient's first visit, a positive blood test was obtained; this was confirmed by two subsequent positive tests. He was put on a rapid course of arsenic therapy and one month later there was practically complete subsidence of the ocular condition.

This was a striking example of luetic tarsitis with ulceration, substantiated by the history of initial infection, the pathologic changes, absence of regional glandular involvement, refractoriness to ordinary treatment, and prompt subsidence when the patient was placed on antisyphilitic therapy.

Detachment of retina with multiple tears

Dr. Peter C. Kronfeld presented a Negress, aged 32 years, six months following a successful operation for a retinal detachment characterized by multiple tears. At the time of her first visit (March, 1944) examination of the left eye revealed a flaccid, freely movable detachment of the lower half and of portions of the upper temporal quadrant of the retina. The corrected central vision was 20/40. In the equatorial region below, 27 through-and-through tears of not less than one p.d. individual size were counted. These were bunched together in a relatively small area, with narrow bridges of retinal tissue between them. The visual-field findings corresponded to the ophthalmoscopic. The operation (May, 1944) consisted of a double arc-shaped barrage laid posteriorly to the cluster of tears, with radial reinforcements. The cauterizations were made with a needle, 0.2 mm. thick and 0.5 mm. long. A trephine opening was made in the vertical meridian below. The postoperative course was uneventful.

The retina was found to have become reattached on the seventh postoperative day and has remained in that position to date. The visual field was almost full, the corrected vision 20/30. In the patient's other eye, which was operated on in 1937 for the same condition in another institution, the retina was partially detached and the vision was 2/200. Multiple tears of average size, as long as they are located within one or two adjoining quadrants, do not necessarily give a poor prognosis.

Robert Von der Heydt.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

December 12, 1944

DR. J. WESLEY MCKINNEY, *presiding*

THROMBOSIS OF RETINAL VEIN TREATED WITH DICUMAROL

DR. ROLAND H. MYERS said that E. J. J., a Negro, aged 71 years, came to his office on November 27, 1944, stating that for two weeks his distance vision had been cloudy and print blurred when reading. The right eye was blind due to injury in childhood and chronic glaucoma. The vision in the left eye was 20/80, improved with +.75D. sph. to 20/60; with a +3.00D. sph. added he read J5. Mydriatics had very little effect in dilating the pupil. The tension was R.E. 67 mm., L.E. 24 mm. Hg (Schiøtz). Ophthalmoscopic examination of the right eye was unsatisfactory because of leucoma of the cornea. In the left eye the descending retinal vein was seen to be full and tortuous as it left the optic nerve and at some places buried in the retinal tissue. There was edema of the retina and macular region. There were scattered hemorrhages over the corresponding retinal area supplied by the descending retinal vein.

The prothrombin time was determined and dicumarol therapy was started on November 29, 1944. Initial dose was 300 mg. or 3 capsules. Forty-eight hours after the initial dose, the prothrombin time was again determined. The prothrombin time had not been changed, so 200 mg. was then given. Twenty-four hours later the prothrombin time started decreasing and this brought his prothrombin activity to 37 percent of normal. The vision on December 12, 1944, with +1.50D. sph. was 20/30; with +3.00D. sph. added he was able to read J1. The prothrombin activity has to be determined each day, for this is the only method by which the dosage of dicumarol can be estimated, because the drug has a cumulative action. The patient's prothrombin time should be decreased to 15 to 30 percent of normal prothrombin activity. Below 15 percent there is danger of hematuria and bleeding from mucous membranes that can be controlled only by transfusions and vitamin K.

The edema of the retina had decreased, retinal vessels were more prominent, and hemorrhages were becoming absorbed. The patient was still under treatment.

The factors in favor of this drug were that it was economical for the patient, and that it could be taken by mouth in the form of capsules.

OPERATIONS FOR EXCESSIVE LACRIMATION

DR. WESLEY MCKINNEY reported that Mrs. D. D., aged 51 years, was seen for the first time on December 26, 1940. Nine months previously she had had a severe infection in the region of the right tear sac. The exact nature of the infection could not be determined, but since that time there had been profuse lacrimation and mucopurulent discharge. Both the upper and lower canaliculi were obstructed near the entrance into the tear sac.

At operation extensive scarring was encountered about the tear sac and canaliculus. Much of the scarring was resected and a silver probe was put into the lower canaliculus and carried into the sac by means of an opening made in its lateral wall. The silver probe was left in place for seven weeks and during this time fluid passed easily through the lower canaliculus. However, it again became obstructed. The patient then received five deep X-ray treatments of about 120r over the lacrimal gland. The lacrimation was not affected by this therapy. Eight

months later a conjunctivodacryocystotomy was performed. The tear sac was freed, and the dome of its cupula was excised. The opening into the tear sac thus made was sutured to an opening made in the lower cul-de-sac, immediately beneath the punctum. This opening closed very promptly despite efforts to keep it open. Later a subconjunctival resection of the lacrimal ductules was performed. All the lacrimal ductules were resected, including the large one behind the external canthus. No appreciable effect was made on the lacrimation.

In view of the fact that the lacrimation was disfiguring as well as uncomfortable, it was decided to remove the lacrimal gland despite the possibility of producing keratitis sicca. At dacryoadenectomy, the accessory lacrimal gland was exposed but not removed.

At the time of last examination there was no lacrimation during most of the time, although the eye looked a little watery. There was still a little lacrimation on windy or cold days.

Pathologic report of the lacrimal gland showed a slight infiltration of small round cells in the connective tissue of the gland. Whether this low-grade inflammatory reaction was the primary cause of the excessive lacrimation or whether it was the result of the X-ray therapy could not be determined.

Plastic repair for cicatricial stenosis of the lacrimal canaliculi

Dr. J. Wesley McKinney reported the case of Mrs. L. C. B., aged 61 years. The history was that the right tear duct had been blocked for about 40 years, but the patient had not been troubled with excessive lacrimation until a few years ago. On examination it was found that both the upper and lower canaliculi were blocked before the entrance into the tear sac.

The patient was operated on on November 29, 1944. The right lower canaliculus was exposed together with a very small and almost tubular tear sac. A lateral incision was made into the tear sac and an obstruction at the neck or entrance into the nasolacrimal duct was found. This obstruction was passed rather easily and dilated with a Ziegler probe. There was much scarring about the lower canaliculus and between the end of the canaliculus and tear sac. The nasal end of the canaliculus was opened and a 2-mm. rubber tube bearing a sleeve of mucous membrane taken from the lip was inserted into the canaliculus and brought out through the dilated punctum. The other end of the tube bearing the graft was inserted into the tear sac and carried into the nasolacrimal duct. The tube was sutured at several places to the upper lid to stabilize its position. The tube was removed on December 11th, and there was a very good opening into the tear sac.

A follow-up report will be made later.

X-ray cataract

Dr. J. Wesley McKinney reported the case of Mr. R. B., aged 41 years, who was first seen in 1937. He had a carcinoma of the limbus of the right eye. At that time he was given 2,700r of X ray during a 14-week period. The tumor disappeared entirely and has, to date, shown no recurrence. At a recent examination, the best vision obtainable was 20/30. This diminution of vision resulted from anterior and posterior subcapsular opacities in the lens. There were also fine opacities along the lens sutures. A few vacuoles were seen. The fundi were normal. The lens opacities were interpreted to be the result of the X-ray therapy.

Subconjunctival resection of the lacrimal ductules

Dr. J. Wesley McKinney reported

the case of J. S., aged 61 years, who was seen in November, 1939. He complained of excessive lacrimation of both eyes for 10 years. There was no conjunctivitis, the puncta were in good position, and the fluid passed into the nose readily through both the upper and lower canaliculi on both sides. There was nothing about the head, neck, or body which could be found to produce excessive reflex stimuli to the lacrimal glands. Subconjunctival resection of the lacrimal ductules was performed on both eyes. After healing was complete there was no alteration whatever in the amount of lacrimation.

Fusion in esotropia without orthoptic training

Dr. Philip M. Lewis presented Miss E. M., aged 25 years, who was examined for the first time in 1931. At that time she had an esotropia of her right eye of 26 prism diopters. The vision was R.E. 20/100, L.E. 20/25. Cycloplegic refraction was R.E. +3.00D. sph. ⌯ +.50D. cyl. ax. 90°, vision 20/70; L.E. +2.00D. sph. ⌯ +.50D. cyl. ax. 90°, vision 20/25. The angle of squint remained practically the same and in June, 1932, a resection and recession were done on the right eye. The esotropia was not fully corrected, but with her glasses on her eyes looked quite straight and she was highly pleased with the result. No exercises of any type were employed.

The patient was not seen again until 1939. Her corrected vision was R.E. 20/50, L.E. 20/20. Her eyes looked perfectly straight, but the exact muscle balance was not recorded. Her refraction was practically the same. No fusion tests were made.

When seen in September, 1944, she had not been wearing glasses for several years, but she was beginning to have some pain in her right eye after reading. Corrected vision was R.E. 20/40, L.E. 20/20. She had an esotropia of 6 prism diopters for distance and 3 prism diopters for near. The near point of convergence was 35 mm. Prism divergence was 9 degrees and prism convergence 28 degrees. Fusion was present, with a red glass and light, in all fields, and she could instantly fuse the Wells charts with a stereoscope. She was referred to the Orthoptic Clinic, where the technician reported normal fusion and stereopsis with the synoptophore and other instruments.

This patient presented the second case of esotropia seen in a period of 20 years in which apparently normal fusion developed without training. A slide was shown, made from a picture taken of her in 1932 just before operation.

Epithelioma of the limbus

Dr. E. C. Ellett reported a case of epithelioma of the limbus, cured after 24 years by excision, cautery, and radium.

C. R., a man, aged 42 years, was seen in 1920. There was a growth at the temporal limbus of the right eye which was increasing rapidly. It was elevated 5 to 6 mm. and had a rough surface. The vision was normal. Radium was applied by Dr. John Maury in August, and the growth was worse in October, when it was excised. The wound did not heal, and a recurrence was evident when he was seen in December. The growth was again excised and the whole surface was cauterized with actual cautery. Two applications of radium were made in the next week and the eye healed and remained well. The photograph taken 24 years later showed the eye, which had normal vision.

This case was reported especially because several similar cases had been reported to this Society in which the eye was removed. Dr. Ellett had been fortunate enough to see all the cases he had examined, cured by excision or irradiation or both.

The diagnosis of epithelioma was confirmed by microscopic examination.

Cyst of the Iris

Dr. E. C. Ellett reported a case of cyst of the iris, treated by iodine injection.

K. D., aged nine months, was seen in October, 1944. There was a cyst of the iris below, present since birth or soon after, which was slowly growing. It was gray-green, translucent, and fused with the iris. The cyst was punctured with two needles and while one drew off the fluid, tincture of iodine was injected into the cyst through the other. About six weeks later the eye was white, the cyst more opaque but smaller, and the eye seemed normal otherwise.

The nature or origin of cysts of the iris is not definitely known, if we except implantation cyst from trauma. Some are mesodermal in origin, others ectodermal. In other words, some have endothelial walls, others epithelial. Excision is the best treatment if the cyst is small.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Section on Ophthalmology

December 21, 1944

Dr. Warren S. Reese, *chairman*

Suprasellar Meningiomas with Scotomatous Field Defects

Dr. Bernard J. Alpers and Dr. N. S. Schlezinger (by invitation) presented a paper on this subject.

Discussion. Dr. Water I. Lillie stated that acute precipitous visual changes are due to inflammatory, vascular, or toxic conditions whereas tumors usually produce a very slowly progressive visual syndrome. In the prechiasmal area this does not hold true, due to the anatomic variations so well brought out by Shaeffer and deSchweinitz. Suprasellar meningiomas almost always have their origin in the tuberculum sella (Cushing), and a certain percentage produce a prechiasmal syndrome. This latter group was presented in Dr. Schlezinger's cases.

One must decide early whether the lesion is inflammatory or neoplastic. A thorough general and neurologic examination, including a spinal-fluid examination, is important before making a definite diagnosis. Multiple sclerosis is a common cause for such syndromes, and the spinal fluid will usually show an increase in the number of cells and a Zone-1 colloidal gold curve. In a chronic type of inflammation, the arachnoiditis type, or suprasellar tumors, metabolic changes occur at the same time or after the visual disturbances, which easily differentiates them from intrasellar lesions. The encephalogram is also an aid in differentiating the suprasellar tumors and chronic basal arachnoiditis.

These two conditions are surgical, and do not respond to medical therapy. Ophthalmologists should insist on an early diagnosis, so that the neurosurgeon can institute the proper therapy. The results are excellent, the mortality rate is very low, and the patient obtains useful vision.

Penetration of Penicillin into the Rabbit's Eye with Normal, Inflamed, and Abraded Cornea

Dr. Irving H. Leopold and Dr. William O. LaMotte, Jr. (by invitation) said that in order to establish the best mode of therapy, it is important to know the penetrating ability of locally instilled penicillin in ointment and solution. This ability has been studied in (a) the normal rabbit eye, (2) the inflamed rabbit eye, and (c) the normal rabbit eye with corneal epithelium denuded.

These investigations show that one application of penicillin, either in liquid or ointment (ointment base recommended by the Committee on Surgery of the CMR) vehicle into the normal rabbit eye, fails to produce a detectable level in the aqueous humor. One instillation of liquid consisted of four drops of 500 units per cubic centimeter, and one application of ointment consisted of 125 grams containing 500 units per gram. The biologic method used for analysis of penicillin could disclose .02 units per cubic centimeter. If applications of either liquid or ointment were repeated every 15 minutes for one hour, aqueous-humor concentrations were still below .02 units per cubic centimeter.

Pasteurella leptisepticus was used to produce standard corneal ulcers in rabbit eyes. Only one instillation of penicillin solution or ointment in these eyes produced aqueous-humor levels that were quite high. Aqueous concentrations were in the vicinity of 0.2 to 0.4 units per cubic centimeter within 15 minutes of one application of liquid, and were greater than 0.2 units per cubic centimeter 1 hr. and 45 min. later. Aqueous concentrations, after one application of ointment, were similar to those with liquid, except that the highest concentration obtained with the ointment was reached at 45 minutes, and with the liquid at 15 to 20 minutes after the instillation.

Small corneal abrasions were produced by mechanical means. The aqueous concentrations obtained in these eyes, immediately after the denudation, were similar to, but slightly greater than, those found in inflamed rabbit eyes. These eyes showed no evidence of inflammation.

Studies also disclosed no significant influence of penicillin solution consisting of 500 units per cubic centimeter on corneal-epithelial regeneration.

The following significant conclusions can be drawn from these studies:

(1) Penicillin in solution or in ointment fails to penetrate into the aqueous humor of the normal rabbit eye after one local instillation, but will penetrate readily into the anterior chamber of rabbit eyes with corneal abrasions or with corneal ulcers.

(2) The concentrations obtained in the anterior chamber of the eyes with inflamed or abraded corneas, following local instillation of penicillin, exceed the probable therapeutic level.

(3) It is not necessary to resort to iontophoresis, corneal-bath technique, or subconjunctival injections in order to obtain effective aqueous-humor concentrations of penicillin in eyes with infected corneal ulcers or corneal abrasions.

(4) Instillation of penicillin solution (500 units per cubic centimeter of normal saline) or penicillin ointment (500 units per gram) need be made only once every two hours into the subconjunctival cul-de-sac to maintain high aqueous-humor concentrations.

(5) Repeated applications of penicillin solution (500 units per cubic centimeter) does not significantly retard corneal epithelial regeneration.

Discussion. Dr. Francis Heed Adler said that it is not often that the simplest way of treating a disease turns out to be the best, but these experiments show that this is true in the case of penicillin in the therapy of acute anterior-segment inflammations. He said he had seen two patients develop a sensitivity to penicillin used locally. He asked Dr. Leopold whether he had seen sensitivity develop in experimental animals, and whether the organism that he used to obtain an experimental keratitis was one which penicillin itself would kill. If that was so, did he find any difference in the curative value of peni-

cillin by different methods of administration.

Dr. Irving H. Leopold, in answer to Dr. Adler's first query concerning local sensitivity from the use of penicillin, said that it is surprising how few cases of sensitizations are seen, considering the huge doses of penicillin that have been used generally as well as locally. Actually, however, reports are appearing in the literature that suggest local sensitization to penicillin. Two cases are reported in the November issue of the Archives of Dermatology and Syphilology concerning contact dermatitis from penicillin. There is also a note in the same issue by Welch, *et al.*, indicating that penicillin when injected intradermally will produce sensitivity. One must be on the lookout for allergic manifestations to this drug, just as when the sulphonamides are administered. Actually, no signs of contact dermatitis were seen in the rabbits, but the rabbit is a notoriously poor type of animal in which to demonstrate such hypersensitivity.

In answer to the second query, this organism, Pasteurella leptisepticus, was found by routine culture in the rabbits' eyes. It is a gram-negative bacillus which was found to be sensitive to penicillin. Bacteriologic studies at first gave the impression that this was a previously undescribed organism, but further study and consultation with Drs. L. A. Julianelle and L. F. Rettger indicated that this organism, although not identical, most closely resembled Pasteurella leptisepticus. Corneal infection was produced with this organism in a series of rabbits, the therapeutic effectiveness of local penicillin was compared, and penicillin therapy was administered systemically. The penicillin that was administered intramuscularly failed to have any influence on the corneal ulcers, whereas all eyes treated locally with penicillin responded favorably to the therapy.

Dr. Francis Heed Adler asked whether the weight of evidence would point toward using the drug locally in all cases, rather than by the intramuscular route.

Dr. Leopold, in closing, said that all studies indicate the superiority of local over systemic administration of penicillin for corneal infections due to penicillin-sensitive organisms.

Syphilitic iritis with particular reference to the Herxheimer reaction as a diagnostic aid and response to different treatment including penicillin

Dr. Joseph V. Klauder, by invitation, and Dr. George J. Dublin discussed the following questions: (1) How valid is the diagnosis of syphilitic iritis based solely on a positive Wassermann reaction, or such diagnosis in the late stage of syphilis or when the duration of infection is unknown? (2) What are the criteria of the efficacy of antisyphilitic treatment to justify the conclusion that iritis was caused by syphilis?

Antisyphilitic treatment exerts a nonspecific effect on iritis. Judgment at times is difficult, since local treatment and nonspecific therapy exert favorable action on iritis. The purpose of this paper was to discuss these considerations, and also the Herxheimer reaction of the ocular lesion as evidence of syphilitic causation. The intensification of the inflammatory process (constituting the Herxheimer reaction) was evaluated by slitlamp examination conducted before and soon after antisyphilitic treatment. The Herxheimer reaction as observed through the corneal microscope has heretofore not been employed in diagnosis.

Of 33 patients with syphilitic iritis, three were treated with penicillin. The

case record of one was detailed; the flare-up of the ocular lesion (Herxheimer reaction) after penicillin was described; the period required for the iritis to become quiescent, and the effect on skin and mucous-membrane lesions were discussed.

In order to avoid too pronounced Herxheimer reaction and too rapid retrogression of the inflammatory lesion (therapeutic paradox), reduced initial doses of penicillin were employed—10,000 units for the first four injections in contrast to 50,000 units employed in treatment of early syphilis. Total dosage of 2,400,000 units of penicillin was administered in the treatment of two patients, and 1,200,000 units of penicillin was administered in the treatment of one patient with syphilitic iritis who had associated secondary syphilis.

The iritis of the three patients treated with penicillin became quiescent within 12 days. This compared with two to five weeks in patients treated with chemotherapy and fever combined with chemotherapy.

Discussion. Dr. Alfred Cowan said he agreed with the authors in that there are very few definite objective features in syphilitic iritis or uveitis that cannot be found in almost any other type of severe uveitis. In his experience papules are rare. Certainly, ophthalmologists seldom make any distinction between the two, so that an appearance that might be considered characteristic of syphilis is not definitely diagnostic of the disease.

Formerly, syphilitic iritis was diagnosed much more easily than today. Then, when a case of severe iritis was seen, if the person were not an alcoholic, had no tuberculosis, and had had no rheumatism, the infection was regarded as of syphilitic origin. This accounts for the great proportion of cases that were then supposed to have been caused by syphilis as compared with the proportion of cases now in which syphilis is the cause.

Dr. Cowan asked Dr. Dublin in how many of the 33 cases he had found lesions that resembled papules. He said he remembered the time when he was very careful to send cases that were thought to be due to syphilis to the syphilographers before he treated them, lest they be given too vigorous treatment, and by a severe reaction produce a certain amount of damage that could never be repaired.

Dr. George F. J. Kelly asked if these cases showed general signs of a Herxheimer reaction, or if this was confined only to the eyes. It was stated that these eyes were examined with the corneal microscope 16 to 18 hours before the patients received their injections. He asked if they were examined again before receiving the injections. He stated that penicillin was referred to as a spirocheticide. He asked if this is regarded as a proved fact.

Dr. George J. Dublin, in reply to Dr. Cowan's question as to whether any nodules were noticed in the iris in this series of cases, said that it was his impression that approximately five cases were seen in which nodules were present. The nodules noted were distinct masses, and were not present at the first examination, at least if they were present, they were overlooked. The last case in which a large mass was noted in the iris was seen by Dr. Alfred Cowan, three days after he had seen and described the case to his residents at Wills Hospital, using this case for demonstration purposes. This was the same case that Dr. Klauder had spoken about wherein fever therapy had caused a tremendous improvement prior to penicillin treatment. When he first saw this case, he said there was noted a pronounced massive nodule in the lower portion of the iris below the pupillary

border. When he reëxamined the case five days later, there was no evidence of this mass at all. There was a very slight atrophy of the iris at this point. This mass had disappeared faster than any that he had ever observed.

In regard to the question as to whether there had been noted any general manifestations of too rapid a Herxheimer reaction, it was his belief that this reaction occurred in only one case; and this was in a case following penicillin injection wherein the patient complained of severe headache. It was felt that this complaint was a general manifestation of Herxheimer reaction, and he did not believe any other reaction was noted. A patient is usually examined by slitlamp microscopy one or two hours prior to the injection of an arsenical, and approximately 16 to 18 hours after the injection. The patients receive from 0.30 to 0.45 gm. neoarsphenamine, in order to avoid the possibility of too rapid a destruction of the tissues or too rapid a cure.

It is interesting to note the different features of luetic iritis by slitlamp microscopy, because this was the first time they had been fortunate enough to be able to see, to a fairly high degree, pathologic change in the anterior segment of the eye. They classified the reactions as positive in four different stages:

In the first stage, after 18 hours, it was observed that there was some clouding of the cornea, some fine keratitic precipitates, and a slight aqueous flare; in the second stage, there was noted a pronounced haziness and cloudiness of the cornea, marked aqueous flare with turbidity, with many floating cells in the aqueous; in the third stage, all the aforementioned findings were present together with nodules in the iris. Some of the nodules had a reddish tint whereas others had a yellowish color. All of the nodules were close to the pupillary border or immediately adjacent to it. In only one case was a mass noted near the root of the iris. In the fourth stage were those cases in which was found a spongy exudate (fibrinous iritis) together with a frozen aqueous.

Evidence of a positive Herxheimer reaction prior to the advent of the slitlamp have been deduced by various physical signs that have appeared; for instance, headaches following injection of an arsenical, or rupture of an aneurysm following antisyphilitic treatment. It was not felt that the positive Herxheimer reaction, particularly as noted by slitlamp microscopy, is an infallible sign of syphilis. However, it is of help as a diagnostic aid in a high percentage of cases. Even where there is distinct clinical evidence of syphilis, there may be a negative Wassermann. There has been a small percentage of positive Herxheimer reactions in nonluetic cases, and it is not possible to explain this factor at this time. He said, however, that they are working on a number of control cases, and hope to have more accurate figures and deductions in the near future.

This paper was presented only as a preliminary report. No hard-and-fast conclusions can be made at this time, but it is hoped that some definite conclusions will be reached in the future. At this time it is felt, however, that a positive Herxheimer reaction as noted by slitlamp microscopy is an addition to the laboratory and clinical methods of examination including the Wassermann test; that it is positive in a large percentage of cases, and should be considered as a diagnostic aid in cases of luetic iritis.

George F. J. Kelly,
Clerk.

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THE RETURN OF THE EX-MEDICAL OFFICER

Every day increasing numbers of medical officers are being released from the armed services and are returning to their communities, where they hope and plan to take their proper places in civilian practice. The number of these individuals is not large at the moment, but during the next few months particularly, the acceleration in the return will become manifest. We should be prepared to do everything within our power to give these men hearty welcome and practical assistance.

Let us frankly face the fact that there are bruised feelings and much self-pity on both sides of the line between the medical officer and the civilian. The efforts we have all made in this terrible venture have taken much out of us. All of us are jittery and confused. There are many signs of the irritation of fatigue all around us, throughout the world, and in every walk of life; and ophthalmologists are people, too.

Let us also frankly acknowledge that there is some resentment on the part of the medical officer against his civilian colleague. It is difficult to measure this feeling, which has always germinated and

developed in an atmosphere of utter boredom, frustration, and unhappiness and which feeds on itself. It was present after the last war, but to a limited extent because of the relatively short duration of the war.

The end of the war found many expert ophthalmic surgeons with nothing or, at best, little to do. If they were occupied at all it was mainly with routine work of an uninspiring nature. There was plenty of time to brood, often in uncomfortable physical surroundings. Those who were (and are still) overseas pined for their families and home. This homesickness, which no one who has not experienced it can ever understand, is a physical pressure, a melancholy, a black-bile humour that creates a sense of being only half alive. There is too much idle time on hand, and it is partly spent in worrying about the well being of loved ones and particularly over the economic and professional future of the individual. There is a growing lack of confidence in one's own professional skill and ability, which seems to be endlessly rusting away through disuse. There is the loss of stimulus from the lack of library facilities, of conferences with one's colleagues in ophthalmology, of chances to talk shop. No matter how strong his character may be or how strong the urge of ophthalmic ambition, if desuetude lasts long enough there comes a time when the medical officer loses his interest in study and finds himself reading mystery stories, playing cards, drinking more than he should, and doing everything else to have the time pass. He smolders over his failure to gain promotion or an award. He hears about the ophthalmic medical officer, not a member of the Board, who gets a majority or even a lieutenant colonelcy, or the equivalent in the navy. He knows that the people at home think that a promotion is a sign of one's ability, although this is obviously not true, for all he has to do is to look around him in his own and other units. He is elated one minute and downcast the next, due to orders, rumors, and counterorders. There are a thousand and one things to gripe about, and he loses his sense of perspective. The longer the state of relative professional inactivity lasts, the more neurotic he becomes.

The men who stayed at home, either from choice, physical defect, or essential necessity, if they are of military age, are on the defensive, and eager to explain to their army or naval colleagues the reasons for not joining up. They, too, in most instances, are frustrated and unhappy men whose consciences prick them willy nilly. They reveal this unconsciously, sometimes by seeking to avoid the returned officer, more often by seeming or actual indifference to the past or present lot of the ex-medical officer.

The frame of mind developed by these experiences often creates a mutual state of embarrassment when the two first get together. It is particularly important, at this first meeting, that the two do get together and break down this barrier. Mutual trust and the good will of future relationships may hinge on this first meeting. Otherwise the reconstruction of peace-time respect and the rehabilitation of both parties may be intolerably delayed and create mischief in our ranks.

The civilian doctor has worked many hours overtime. His offices have been crowded beyond capacity, in most instances. The hospitals are overfull and bed space is at a premium. The wages he pays, taxes, and overhead expenses have increased by staggering amounts. He has made a greater gross income but ends up with less net, as a rule. He has been caught in a treadmill of service to the people. This overwork has already resulted in many casualties among our older

men and leaders that American ophthalmology can ill afford. Their loss is as surely ascribable to war as if they had died in battle.

The teaching staffs of medical schools and hospitals have been depleted, extra work has had to be done by those who remained. The accelerated courses will have had an effect on teachers and students that is now beginning to become manifest. Fortunately, there were very few of the younger men of military age who, relieved of military responsibilities for physical or other reasons best known to themselves, seized advantage of the conditions and have made a good thing out of it. The great majority devoted themselves conscientiously to looking after the absent colleague's patients and interests and will gladly welcome the day of his return.

While he was away on service the medical officer received information through the medical journals and correspondence that much would be done to ease him into civilian life on his return. His hopes were built up and he felt grateful to his friends and colleagues for this interest. However, due to many factors, some beyond the power of the different societies to avoid, much of this planning remained in the paper stage only, and the medical officer on his release from service feels let down and is disillusioned. Perhaps many of the schemes were too ambitious, some too difficult, and others impractical of fulfillment. Others got off to a late start, but start they have and it is good to cite an example of what is being done by one local society. According to the Ohio State Medical Journal (October, 1945), the Columbus Academy of Medicine has formed a committee, chairman Dr. C. C. Sherborne, that has developed nine points in a program of actual and workable assistance to the ex-medical officer. These are:

(1) Arrange through the Medical Bureau for the assignment of a temporary telephone number, which will be listed at the Bureau address and will be answered by that office so that those expecting discharge within the next few months may have their names carried in the next telephone directory.

(2) Contact real-estate boards and rental agencies to request the filing with the Academy office of information data regarding available office locations; also, to request the special coöperation of these groups to assist returning physicians to secure adequate office space.

(3) Secure information about the opportunity to enter practice as assistants or associates with doctors now engaged in local practice.

(4) Secure information about openings for returning physicians, on either part-time or full-time basis, in various local state institutions.

(5) List the names of all returned doctors periodically in the Academy Bulletin, so that their names will be known to all other physicians in order that former patients may be immediately referred back to these war-service members.

(6) Arrange for newspaper announcements, under official Academy sponsorship, regarding the return to practice of war-service physicians.

(7) List at the Academy office the openings of residencies in local hospitals.

(8) Provide information regarding postgraduate instruction and refresher courses.

(9) Arrange through the Academy office for financial assistance.

These are all eminently sound principles upon which to act, and are not difficult to carry through. If each local medical society would carry out the above program, much good will ensue.

The matters of office space and equipment are serious. The local society

through its real-estate committee could act as a clearing house for information regarding office space. Doctors who may have some excess space they could turn over could notify this committee and give the ex-officer a break in finding room in which to work. Perhaps temporary arrangements in the use of a colleague's office and equipment during certain hours would tide the ex-medical officer over some stormy days while he is getting his own space settled.

New equipment, particularly ophthalmic, is most difficult to get. The instrument houses are coöperating fully, however, and if the returned physician will enclose a copy of his service certificate with his order, the chances are that a high priority will be given the order, and delivery of the equipment and instruments expedited.

Last, but not least, should be mentioned the social welcome home of the returned medical officer. The local ophthalmological society can do a good service here by setting aside at its monthly meeting a time devoted to welcome by name and honor in person those opthalmologists, fellow members, who have returned to civilian life during the month. A hearty handshake and an honest welcome will go a long way toward the reaffirmation of friendships and trust. It need not be formal or speechmaking in nature, but it must be sincere.

Derrick Vail.

BOOK NOTICE

REFRACTION OF THE EYE. By Alfred Cowan, M.D. Second edition. Clothbound, 278 pages, 181 engravings and 3 color plates. Philadelphia, Lea and Febiger, 1945. Price $4.75.

With an excellent background of theoretical and practical physiological optics and many years' experience in the teaching of this subject at the University of Pennsylvania, the author published the first edition of "Refraction of the eye" in 1938. This book has since become a standard reference work in its field.

In this second edition there is very little change from the earlier publication, and almost no new material has been added except for a somewhat more detailed discussion of such subjects as contact lenses and aniseikonia, in keeping with more recent advances. The inclusion of a few new diagrams and minor rewriting of some of the explanatory material serve further to clarify an already lucid text. The section on physiological optics, which constitutes the major portion of the book, is particularly valuable because of the practice, continued from the earlier edition, of adding a brief recapitulation at the conclusion of various chapters, thus serving to summarize the important points in the more or less involved material under discussion. The objective and subjective methods of refraction necessarily reflect the personal beliefs and practice of the author but nevertheless offer an excellent working basis for the student. The description of the various types of bifocals is particularly practical.

Increased amount of material per page, in keeping with modern practice, has resulted in a reduction of the total number of pages from 319 to 278, but the text remains extremely legible and well printed.

As has been well demonstrated by the examinations of the American Board of Ophthalmology the field of physiological optics is one in which ophthalmologists frequently show a deficiency. Dr. Cowan's efforts should continue to be of help in preparing students in this phase of their theoretical and practical training.

William A. Mann.

CORRESPONDENCE

Commonly used ophthalmic drugs of little value

Editor,

American Journal of Ophthalmology:

In view of the remarkable advances made by science in the field of medicine, it is surprising and, in fact, extremely embarrassing to find that the ophthalmologic profession continues to use popularly known, but ineffective medicines. Among these drugs of little therapeutic value are boric acid, silver nitrate, dionin, and yellow oxide of mercury. I could add others to this list, but I am pointing out those, in particular, which have failed grossly to keep pace with modern therapeutics.

In the Journal of the American Medical Association, September 29, 1945, there appears an article by Dr. E. H. Watson on the subject of boric acid. Dr. Watson reports his findings from the Department of Pediatrics and Communicable Diseases, University of Michigan Medical School, Ann Arbor. He points out the toxic effect of boric acid, especially when used in ointments and in solutions for use in maternities. He stresses the toxic effect when used as a solution for irrigation of the stomach and bladder. He summarizes his article in short conclusive sentences as follows:

> Use of boric acid preparations should be discouraged because of their limited usefulness and the real dangers of their accidental and intentional use. The medical profession as a whole probably puts unwarranted confidence in boric acid preparations and is likely to forget that boric acid is a poison.

Of course, ophthalmologists have not found boric acid to be poisonous or even irritating when used as an eye wash. It is widely used by the laity. The ophthalmic profession has used it as a collyrium for years, and its effectiveness in all forms of external eye diseases has been taken for granted. Personally, I have found no objection to a saturated boric-acid solution as an eye wash, nor have I found it to be harmful. At least a saturated solution is less irritating to the eye than is sterile water or ordinary tap water. Perhaps the effectiveness of boric acid as an eye wash is hidden in the effectiveness of water itself as a cleansing agent. If a cleansing agent is desired for the eye, then a normal salt solution is desirable, for sodium chloride is one of the natural constituents of the lacrimal secretion. I do not consider this latter point, however, of great value in discouraging the use of boric acid. From a scientific standpoint alone, I know that boric acid has little bactericidal value and for this reason it should be relegated to the scrap heap as an unimportant drug.

I expect many of my colleagues to come to the defense of boric acid, but I believe such defense will have mere sentimental backing, the only support being that it is an old and tried drug and not suspected of having the toxic effects as reported by Dr. Watson. It is true that the older ophthalmologists have been taken aback by the debunking of their favorite preparation through scientific research, but I am sure that the younger men in the medical world are in favor of shelving the old in favor of the new.

For many years I have favored the elimination of silver nitrate as a preventive agent for ophthalmia neonatorum. The fact that 60 years ago Carl Siegmund Franz Credé presented to the world a method for preventing blennorrhea in the newborn does not mean that the sulpha drugs and penicillin should be ignored out of respect for a previous discovery.

In 1934 I conducted a survey for the Department of Public Health, Philadelphia, concerning the limitations of

silver nitrate in the prevention of opthalmia neonatorum. At that time I pointed out that silver nitrate, either 2 percent or 1 percent, was not gonococcocide nor a germicide of any great value, especially when used as a preventive agent in the eyes of the newborn. Before publishing my report I conferred with my esteemed friend, the late Dr. George de Schweinitz, who was then chairman of the Committee for the Prevention of Blindness of the Philadelphia County Medical Society, of which I was a member. He reviewed with me the preliminary findings of my report, which proved beyond doubt that the Credé method for the prevention of ophthalmia neonatorum was grossly ineffective in the light of methods used at that time; namely, the year 1934. Instead of recommending the abandonment of the use of the silver nitrate, I compromised with Dr. de Schweinitz by recommending a 0.5-percent solution of silver nitrate to be used in the eyes of the newborn on three successive days, preceded, of course, by thorough mechanical flushing of the eyes. It was my thought at that time that the treatment of gonorrhea in the expectant mother was one of the most important phases in the prevention of ophthalmia neonatorum. Dr. de Schweinitz thought it would be indiscreet to tell the public and the medical profession that the Credé method was not held in such high esteem by scientists, and that the sudden loss of confidence in this method might lead to an outbreak of ophthalmia neonatorum. I took the advice of my senior, knowing that his more mature judgment should be followed.

However, 10 years have passed and many effective drugs for the prevention of ophthalmia neonatorum are on the market. Silver nitrate will go down in history simply as one of the methods tried in the late nineteenth and early twentieth centuries.

Dionin is another drug which, I believe, has no value in ophthalmology. Whoever created the slogan that dionin is a lymphagogue certainly deserves a prominent place as a publicity agent. There has never been any proof that dionin produced lymph in tissues where there was no lymph, nor that it has any actual effect in reducing the density of scars. If "time" were to be compared with dionin, I think that the time factor would far exceed dionin as an agent in reducing corneal scars.

Just what effect yellow oxide has on the eyelids remains to be proved. I have not found it to be effective, unless it was the ointment base. It would be short of folly and a waste of time and effort to enter into any controversy that would be scientific in nature to discuss the effectiveness of yellow oxide of mercury. Yes, many ophthalmologists and thousands of lay persons will testify as to its value, but I would like to have one prove by laboratory methods that yellow oxide of mercury, as it is now offered on the market, has any value whatsoever when used as a local agent in the treatment of eye diseases.

I think it is time that ophthalmologists clean house, particularly in connection with their therapeutic shelves.

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ABSTRACT DEPARTMENT

EDITED BY DR. WILLIAM H. CRISP

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is mentioned only in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases and parasites
18. Hygiene, sociology, education, and history
19. Anatomy, embryology, and comparative ophthalmology

1

GENERAL METHODS OF DIAGNOSIS

Dashevskii, A. I. **Color-contrast tables for examination of night vision and diagnosis of night-blindness.** Viestnik Oft., 1943, v. 22, pt. 5, p. 20.

In the last war there were many complaints of night-blindness, some real, others simulated. A simple portable device is based on Kravkov-Vieshnevsky's more elaborate apparatus for examination of dark adaptation by utilization of the Purkinje phenomenon. While the normal individual when dark adapted sees first blue, the hemeralope sees first yellow among colored objects. The device consists of 21 cards in a small box, and so built that it can be readily transformed into an adaptometer, with a slit diaphragm and a scale for varying illumination on top, and openings at the sides for simultaneous testing of the patient and the normal examiner, whose responses are compared. No preliminary dark adaptation is required. Both examiner and patient are light adapted for 10 to 12 minutes to the same source of illumination. Three cards with the same gray squares on the left and a series of darker grays on the right are used for determining the light-minimum thresholds. The remaining 18 cards consist of six series with red, orange, yellow, green, blue, and purple squares on the right, and from two to four shades of gray on the left, for quantitative exploration of the Purkinje phenomenon. The results are graphically recorded by entering the colors on the abscissa and the gray series on the ordinates. The result is a straight line for the normal at 45 degrees, a horizontal line for the total hemeralope, and a broken curve intermediate between the two others for the partial hemeralope.

M. Davidson.

2

THERAPEUTICS AND OPERATIONS

Ackerman, R. L. **Penicillin in ocular therapy.** Viestnik Oft., 1944, v. 23, pt. 1, p. 45.

Penicillin has been found effective in 34 cases of which 16 cases were of conjunctivitis, including 11 with pneu-

mococcus in the smear, and the rest cases of corneal foreign body.

M. Davidson.

Babudieri, B., and Bietti, G. B. **Electron microscopic observations on bacteriolysis produced by lysozyme of tears.** Arch. of Ophth., 1945, v. 33, June, pp. 449-454.

Two strains of gram-negative cocci of the sarcina type were exposed to lysozyme of tears and the resulting bacteriolysis studied by the electron microscope. The stages of disintegration differed considerably from those produced by bacteriophage or by the sulfonamides. (18 electron microscopic photographs, references.)

John C. Long.

Leopold, I. H., and Steele, W. H. **Influence of local application of sulfonamide compounds and their vehicles on regeneration of corneal epithelium.** Arch. of Ophth., 1945, v. 33, June, pp. 463-467.

The influence of various sulfonamide compounds and ointment bases on the rate of healing of experimental corneal abrasions was studied in the rabbit. It was found that locally-applied ointment bases and powder bases alone and sulfonamide-containing ointments and powders deterred regeneration of corneal epithelium to a greater degree if the denuded area included the limbus. There was little significant difference between the effect of ointment bases and powder bases alone and that of sulfonamide-containing ointments and powders on the rate of regeneration of corneal epithelium. A 10-percent solution of sodium sulfadiazine had little or no retarding effect, even on lesions involving the limbus. From this observation it would seem that the major deterring action of sulfonamide compounds on regeneration of corneal epithelium must be due to some mechanical effect of the vehicle. Corneal scarring was more frequent in the treated denudations than in the untreated ones, but in the incidence of scarring there was no difference between eyes treated with sulfonamide ointments and powders and those treated with the simple ointment bases and powders used as vehicles for the sulfonamide. (3 tables.)

John C. Long.

Plitas, P. S. **Ultrahigh-frequency-field therapy in certain eye diseases.** Viestnik Oft., 1944, v. 23, pt. 1, p. 32.

The author called attention in 1935 to the experimental evidence of histopathologic changes in the ganglion layers of the retina and in the optic nerve, resulting from exposure to the excessive heat of ultrashort radio waves. Shibkova demonstrated in addition changes in the nervous system in the same experimental animals. Other investigators have arrived at the conclusion that other effects beside that of temperature are involved in the exposure of tissues to the condensation field of ultrashort waves. The author favors small dosage short of heat and uses 6.1-m. waves, at 15.5 V. and indicator 1.0 of the "Ultrapandoros" apparatus, with 45-mm. round bitemporal electrodes, 1.5 to 2 cm. from the diseased eye and 2 to 3 cm. from the healthy eye. The sessions are five to six minutes, repeated daily at times, but mostly every other day, a course being of ten sessions. The best results have been secured in traumatic iridocyclitis and anterior-segment tuberculous lesions, and in sclerokeratoiritis, scleritis, and episcleritis. No appreci-

able results were obtained in hypopyon ulcer, trachomatous ulcer or phlyctenular keratitis. After two or three sessions pain is relieved and injection disappears. Absorption of infiltrates is evident by the eighth or ninth session.

M. Davidson.

3
PHYSIOLOGIC OPTICS, REFRACTION, AND COLOR VISION

Dilthey. **Accommodation spasm caused by Albucid?** Klin. M. f. Augenh., 1941, v. 107, July, p. 75.

A case report of transitory myopia probably caused by Albucid medication in a 41-year-old female. In spite of the fact that cycloplegia with atropine failed to neutralize the myopic status, the author is inclined to assume that the change in refraction was caused by accommodative spasm, induced by the Albucid.

F. Nelson.

Pascal, J. I. **Visual exercises in ophthalmology.** Arch. of Ophth., 1945, v. 33, June, pp. 478-481.

Exercises designed to improve central macular vision do not increase macular activity in the physiologic sense but bring about improvement through intensification of the psychic phase of the act of seeing. Treatment of amblyopia ex anopsia by exercise is an excellent example of such intensification. Why cannot this process be extended? If the psychic contribution to vision can be so greatly enlarged in these cases after correction of the ametropia, why cannot it be developed, to some extent at least, without correction of the ametropia? Why cannot the mind be trained to respond to an unfocused retinal blotch? Not only may central vision be improved by suitable exercise but recently it has been shown that peripheral vision as well may be intensified by training.

It is suggested that recent claims for the cure of color blindness by means of visual exercises should be examined with an open-minded attitude. Certainly no new structural elements can thus be developed in the retina nor can any new visual pigments be formed. Yet in the opinion of the author it is no exaggeration to say that persons taking these exercises have acquired a greater degree of color perception and color discrimination than they had before taking the exercises.

A type of visual exercise which is practiced by teachers and educators generally more than by ophthalmologists is concerned with improvement in the speed of reading. Akin to this type of exercise, but much more developed and on a broader psychologic basis, is the work being done to increase the speed and span of the visual act.

Visual exercises relating to the development of improved neuromuscular coördination of the two eyes constitute the well-known field of orthoptics. In many instances the ophthalmologist is not fitted by temperament or inclination to engage directly in the supervision of visual exercises. In such cases the work can well be carried out by the orthoptic technician under the supervision of the ophthalmologist. (References.)

John C. Long.

Posner, Adolph. **Why dark glasses?** Sight-Saving Review, 1944, v. 14, Winter, p. 161.

Dark glasses are useful in reducing the dazzle of strong light, but glasses can produce much harm because they do not protect against the heat rays of the sun. Burning of the maculae has

occurred as a result of looking directly at the sun or an eclipse, the wearer enjoying the false security of such glasses.

Brownish-gray lenses absorb the short and long ultraviolet rays and are best for mountain climbing. Flesh-colored and smoke (gray) lenses diminish the total quantity of light more uniformly over the entire range of the spectrum and should be worn by persons who are exceptionally sensitive to the dazzle of reflected light. Green and bluish-green are preferred for flying and beach wear. Lightly tinted lenses are of little practical value.

Francis M. Crage.

Steffen, R. **Transitory myopia after treatment with Albucid.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 597-599.

A 26-year-old male was treated for urethral gonorrhea with large doses of sulfa drugs, among them Albucid. A purely lental increase of manifest myopia from −1 D. to 3.5 D. resulted, remaining after cycloplegia with homatropine and atropine. This increase disappeared completely within four days after cessation of the medication. (Bibliography.) F. Nelson.

Trendelenburg, Wilhelm, **An anomaloscope for examination of tritoform color-vision defect with spectral blue equation.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 537-546.

Description of a new apparatus for examination of defects of blue perception. The instrument was originally designed by Nagel and can be used for examination of tritanomalous and tritanopes. For details the original article should be read. (2 tables, references.) F. Nelson.

Trendelenburg, W., and Meitner, H. J. **Differentiating value of the Stilling-Hertel charts for normal color vision and different types of color-vision defects.** Klin. M. f. Augenh., 1941, v. 107, July, pp. 12-19.

Stilling-Hertel's charts, 20th edition, were examined as to their differentiating value. Some charts were interpreted incorrectly by normal persons because the form of numbers and letters was not clear enough. The charts were classified as between those having no differentiating value and those well suited for the differentiating of persons with and without normal color sense. The authors discuss the possibility and necessity for differentiating anomalous from normal on the one hand and anomalous from dichromates on the other. (1 table, bibliography.)

F. Nelson.

4

OCULAR MOVEMENTS

Hardy, Le G. H. **Clinical use of ophthalmic prisms (metric).** Arch. of Ophth., 1945, v. 34, July, pp. 16-23.

This paper is a follow-up to a recent article on ophthalmic prisms. (Amer. Jour. Ophth., 1945, v. 28, Oct., p. 1172) The various positions of holding prisms are analyzed, using mathematical formulae and graphs in the explanation. The practical summary to this somewhat technical paper is as follows: The clinical use of ophthalmic prisms for measuring deviations of the eyes involves little known but serious dangers of error, particularly in the higher powers. The units of prism strength are not usually marked on the prisms. Since several units are in use, this lack should be remedied. Great care should be used to avoid error in

placing metric prisms. If such errors are made, it is much safer to incline the prisms toward the position of minimum deviation than away from it. In measuring high degrees of deviation, it is much safer to divide the prism, holding approximately half the amount over each eye. (10 figures, references.)

R. W. Danielson.

Kamellin, Samuel. **Management of paralysis of divergence.** Arch. of Ophth., 1945, v. 33, June, pp. 476-477.

Paralysis of divergence may be recognized by the following: 1. There is diplopia in the midplane for distant vision. 2. The diplopia is equal in all directions of gaze at the same distance from the subject's eyes. 3. The diplopia is eliminated as the eyes converge to near range. 4. The images are homonymous and separate farther as the test object is farther withdrawn from the subject.

The author describes the management of paralysis of divergence as carried out by the late Sanford Gifford. Patients with only a small amount of defect were given prisms base out to wear for distant vision. Patients needing a larger amount of prism base out for the correction of diplopia were advised to have an O'Connor cinch operation on one or both external rectus muscles. It is estimated that each strand of the cinch suture will correct approximately 1½ prism diopters of deviation when the operation is performed on the lateral rectus muscle alone. Two cases are reported in which the O'Connor cinch operation was successfully used. (References.)

John C. Long.

Putnam, O. A., and Quereau, J. V. D. **Precisional errors in measurement of squint and phoria.** Arch. of Ophth., 1945, v. 34, July, pp. 7-15.

The purpose of this paper is to examine the degree of precision obtained with the various methods of measuring phoria and squint. Three factors compose the errors in precision in any measurement: 1, inherent error in means or method; 2, human error in observation and manipulation; 3, error in degree of reproducibility, as in high precision determinations of weight or size of an object in which an average of varying results is necessary.

Four past and current means of measuring squint and phoria are considered: (1) prisms, (2) major amblyoscopes, (3) perimeters, and (4) the Hirschberg method. One new means, the Quereau-Putnam tropophorometer, is analyzed. The errors of the various methods and the means of compensation for them are discussed in detail. This article should be read by all interested in the accurate theoretical and practical measurement of squint. (7 figures, references.)

R. W. Danielson.

5

CONJUNCTIVA

Glantz, Otto. **Epidemic keratoconjunctivitis. Clinical aspects and successful treatment.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 561-571.

A report about 312 cases of epidemic keratoconjunctivitis treated in Glantz's practice during 1938-1940. The majority (190) were spontaneous and of undetermined etiology. The rest occurred after: removal of corneal foreign bodies, other corneal lesions, chemical burns, lid abscesses, and removal of chalazion or lime concretion or pterygium. The main treatment was with

optochin hydrochloride 1-percent solution, which the author regards as a specific for the condition. The average duration was seven days. (3 tables, references.) F. Nelson.

Johansson, Ernst. **Albucid treatment of trachoma.** Klin. M. f. Augenh., 1941, v. 107, July, pp. 72-75.

At the Municipal Eye Hospital in Litzmannstadt, ten fresh and untreated as well as fifty advanced cases of trachoma were submitted to internal treatment with Albucid, as advocated enthusiastically by Lindner. In addition, 388 trachoma patients regularly treated in rural trachoma clinics received Albucid. Though some influence of Albucid on the healing process seemed undeniable in certain instances, the author does not feel that the drug fulfills the high expectations as a cure for trachoma. F. Nelson

Kalfa, S. F. **The treatment of trachoma by streptocide locally.** Viestnik Oft., 1944, v. 23, pt. 2, p. 39.

Encouraging results are reported in 14 cases resisting other treatment.

Kolenko, A. B. **A modified Denig operation in annular pannus.** Viestnik Oft., 1944, v. 23, pt. 3, p. 46.

Because of the many objections to the use of lip mucosa—its liability to succumb to the trachomatous process, its disfiguring appearance and the awkwardness of suturing it—the author uses the ocular conjunctiva. Two parallel semicircular peritomies are made 4 mm. apart temporally and nasally, remaining attached at the 12 and 6 o'clock positions respectively. The two strips of conjunctiva are undermined and interchanged and sutured in place. The flaps are more viable than free transplants and results are excellent, after an apparent deterioration in the pannus. Sutures are removed on the fifth or sixth day. M. Davidson.

Lauterstein. **The treatment of chemosed, prolapsed, and strangulated conjunctiva.** Viestnik Oft., 1944, v. 23, pt. 3, p. 46.

Replacement and temporary suture of the two lids has been found very effective in a number of cases. The sutures are taken out on the fourth day. M. Davidson.

Lorenz, R. **Decline of keratoconjunctivitis eczematosa.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 556-561.

Comparative statistical evaluation of the total number of patients and the incidence of this disorder in the years 1909 and 1939 respectively, treated at the II University Eye Clinic in Vienna, included ambulatory and hospitalized patients. The four charts and four diagrams show that the hospitalized cases in 1909 were 6.5 percent of the total; in 1939, 4.5 percent. Ambulatory cases in 1909 were 13.66 percent; in 1939, 2.14 percent. Thus not only was there a general decrease of the disease, but the average was less severe. In 1909 a majority of the serious cases had to be content with ambulatory treatment, because the total incidence was so high that not enough beds were available; whereas in 1939 the total number had decreased so considerably that it was possible to be more liberal with hospitalization of the less serious cases. Lorenz attributes this striking difference to improvement of living and working conditions. (4 graphs, 4 tables.) F. Nelson.

Malbrán, Jorge. **Antepositio conjunctivae fornicis.** Arch. de Oft. de Buenos

Aires, 1943, v. 18, June, pp. 283-287.

The author has used this type of operation with good results in cases of vernal conjunctivitis with marked papillary hypertrophy. First advocated by Shimkin, the operation consists of resection of the affected tarsal conjunctiva and the advancement of the uninvolved conjunctiva of the fornix to cover the denuded tarsus. When vernal catarrh is complicated by trachoma, a partial resection of the tarsus is done at the same time. The surgical technique is described in detail. (4 illustration, references.)

Plinio Montalvan.

Pitter, J. **A rare localization of Osler's disease beneath the conjunctiva.** Klin. M. f. Augenh., 1941, v. 107, July, p. 76.

A 51-year-old female with recurrent epistaxis since childhood developed telangiectases on the lips, the mucous membrane of the tongue, and the upper palpebral conjunctiva. Other members of the family were known to have suffered from epistaxis. F. Nelson.

Szinegh, Béla. **Kalziphedrine in the therapy of eye diseases.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 595-597.

The author recommends kalziphedrine medication in combating eczematous keratoconjunctivitis and allergic conjunctivitis. (References.)

F. Nelson.

Theodore, F. H. **Parinaud's oculoglandular syndrome due to a yeastlike organism.** Arch. of Ophth., 1945, v. 33, June, pp. 471-475.

What was first known as Parinaud's conjunctivitis is not a definite disease with specific pathologic and bacteriologic characteristics but a symptom complex which can be caused by a number of etiologic factors. The syndrome is characterized by a chronic uniocular granulomatous conjunctivitis with regional lymphadenitis. Tularemia, tuberculosis, an unidentified virus infection, lymphogranuloma venereum, syphilis, and even infections with the hemolytic staphylococcus and Bacillus proteus have been listed as causing the syndrome. By far the most common agent appears to be the leptothrix, first found by Verhoeff. The author reports a case of Parinaud's syndrome apparently due to an unidentified yeastlike organism.

The patient was a thirty-year-old man with a unilateral conjunctivitis accompanied by preauricular and cervical lymphadenitis and fever. Yellowish-gray nodules were present on the conjunctiva, especially at the upper tarsal border. Both the cervical and preauricular glands suppurated and drained, the cervical for a period of nine months. Biopsy material from the conjunctiva and smears from the preauricular gland contained yeastlike organisms. A culture of the material showed a growth of yeast but was accidentally destroyed before the organism could be positively identified. Leptothrix could not be found in the material. (4 photomicrographs, references.) John C. Long.

6

CORNEA AND SCLERA

Azarova, N. S. **Streptocide in anterior-segment affections of the eye.** Viestnik Oft., 1944, v. 23, pt. 1, p. 37.

In 35 cases of corneal ulcer including 21 with hypopyon keratitis and six with pupillary occlusion and seclusion, the application of streptocide within 5 to 15 days of duration of the ulcer gave brilliant results in from 10 to 15 days

with only very fine scarring and early epithelization, even before disappearance of the hypopyon. Phlyctenular-keratitis ulcers cleared up in 3 to 5 days. M. Davidson.

Badtke, Günther. **Peculiar cases of keratoconus with blue scleras, in two sisters.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 585-592.

Two sisters eight and ten years of age from an isolated village in South Tyrol showed general feebleness, intelligence defects, dryness of skin and hair, delayed dentition, keratoconus, and typical blue scleras; probably all being manifestations of inferiority of mesenchymal development. The family tree was not well known. However, it could be proved that eye diseases and blindness were rather common occurrences in the family and that intermarriage was frequent. (3 illustrations.) F. Nelson.

Chan, Eugene. **Blue sclerotics associated with bony defects.** Jour. Internat. College Surg., 1945, v. 8, March-April, p. 140. (See Amer. Jour. Ophth., 1945, v. 28, Nov. p. 1282)

Feldman, L. L., and Shartz, S. E. **Therapeutic keratoplasty in serpent ulcer of the cornea.** Viestnik Oft., 1944, v. 23, pt. 1, p. 27.

Preserved corneas, first used by Filatov in 1933, and applied by Chechin-Kunina in 1940 in the treatment of hypopyon keratitis, have been tried in 16 cases. Of these, 15 were of traumatic origin and one of unknown cause, in persons aged from twenty to seventy years, and with various bacterial flora. In the majority most of the cornea was involved, while eight had hypopyon and two had perforations. All had the benefit of milk injections and urotropin, some in addition Bucky X-ray therapy, paracentesis, cauterization, and streptocid internally. The transplants used were from 14 cadaver eyes and from two living eyes. The majority had the transplantation done between the tenth and twentieth day after ulceration. A trephine was used to remove the corneal area of greatest infiltration. The hypopyon was removed, and then the transplant was placed. Under slitlamp observation after the transplanting, the corneal infiltration, before operation diffuse, became circumscribed, and the corneal ulceration cleared. Vascularization invaded the membrane formed back of the transplant, but never invaded the transplant. The membrane adhered to the transplant and at times retracted it, whereas at other times fluid accumulated between them and the transplant bulged. The pain disappeared, progress of the ulcer was stopped, and the hypopyon was not renewed. In one half of the cases visual acuity was improved by operation. The benefits of the procedure are ascribed to replacement of diseased cornea with transparent cornea instead of by scar tissue, to improved nutrition of the remaining cornea, and to lowering of tension. Several of the cases were complicated by intraocular hypertension, usually controlled by iridectomy or miotics. One eye had to be eviscerated. The author concludes that the operation is indicated in very severe cases of hypopyon keratitis with otherwise hopeless prognosis. Its purpose is not so much to secure improvement in vision but to save the eye from being a total loss. M. Davidson.

Ivanova, E. A. **The treatment of corneal ulcers.** Viestnik Oft., 1944, v. 23, pt. 3, p. 34.

Ochapovskaya's blood-serum treatment for corneal ulcers, based on the principle that corneal tissue deprived of its epithelium should benefit from the nutritive elements including the oxygen of the red cells and immune bodies and enzymes, has been modified and applied to 26 cases, 19 of which showed pneumococci in smears. A larger quantity of the patient's own blood is used, coagulum removed, and serum stored and used in the form of a collyrium. The results were satisfactory, and the method is recommended as an addition to our armamentarium —always available and cheap.

M. Davidson.

Kaminski, D. S. **Albucid iontophoresis in the treatment of hypopyon keratitis.** Viestnik Oft., 1944, v. 23, pt. 3, p. 31.

Experiment with this method in 13 cases has not been encouraging, except for relief of pain and photophobia and influencing favorably the response to atropine, and formation of less conspicuous corneal scars.

M. Davidson.

Katznelson, A. B. **Corneal disease due to vitamin B_1 starvation.** Viestnik Oft., 1944, v. 23, pt. 1, p. 23.

An outbreak of hypovitaminosis and avitaminosis B_1 was observed in the extreme North under the following circumstances: As the result of a severe snowstorm lasting three days, followed by high humidity, a large group of individuals found themselves isolated, without shelter, with clothes frozen, and compelled to exist principally on biscuit. An outbreak of eye trouble ran a typical course from the beginning of the snowstorm. It began with photophobia, lacrimation, and burning of both eyes, but with quick recovery of one eye, so that when first observed it was bilateral in only 4 percent. On the second or third day vision often fogged and fell rapidly. Headache and eyeache were complained of by most, but few had colds in the head, cough, or chilliness. Some died suddenly though apparently otherwise well, others following a brief diffuse bronchiolitis and pulmonary emphysema.

The immediate observations by ophthalmologists were of deep cloudiness and marked anesthesia of the corneas without superficial lesions. Observation by the author three weeks later showed three types of lesion: disciform keratitis with only occasional superficial erosion, annular abscess of cornea, and superficial keratitis. The corneal periphery was strikingly transparent in all cases. The uveal tract was involved in one third of the cases. There was hypotension in almost all cases. The iris stood operative intervention well, iridectomy being undertaken early in some. Useful vision was ultimately secured in one half of the cases. General examination indicated a mild B_1 deficiency combined at times with B_2, B_6, and C vitamin-deficiency.

The trigeminal was involved in all cases studied neurologically. The sudden deaths are considered vagus deaths, and the pulmonary cases as manifestations of peripheral neuritis in lungs and heart. There was no evidence of vitamin-A deficiency. This "natural experiment" is taken to show that virus infection is not the only etiologic factor in herpetic and disciform keratitis.

M. Davidson.

Nuri Fehmi Ayberk and Sayrun, A. **Rosacea keratitis.** Göz Klinigi, 1945, v. 2, no. 5, pp. 111-115.

The disease, of the nodular type, involved the left eye and also the whole face. The patient, a country woman of 43 years, lived entirely on carbohydrates (insufficiency of riboflavine). She was treated with local application of riboflavine in the eye, 100 grams of brewer's yeast by mouth every day, and unilateral application on the face (leaving the other side as a control) of an ointment containing vitamin B_2. Healing of the eye and of the treated half of the face was rapid.

W. H. Crisp.

Sergievskii, L. I. **Treatment of corneal ulcers with Albucid.** Viestnik Oft., 1944, v. 23, pt. 2, p. 37.

The best results have been observed in marginal ulcers and in those of absolute glaucoma. Progress was stopped, pain disappeared, and there were no recurrences. The criteria used were rapid epithelization and disappearance of hypopyon. Poor results were noted in cases with dacryocystitis and other complications. It is pointed out that corneal disease requires as much study of the organism as a whole as uveal disease does. The report is based on seventy cases. M. Davidson.

7

UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

García Nocito, P. F., and Zubillaga, J. B. **Glassy lines in the anterior chamber.** Arch. de Oft. de Buenos Aires, 1943, v. 18, May, pp. 266-270.

A patient 16 years old showed a glassy line in the anterior chamber of the right eye consecutive to an old obstetrical injury. On slitlamp examination this line appeared as a filament free in the anterior chamber, and attached by its two ends on the posterior surface of the cornea, corresponding to the limbus, at the 11 and 5 o'clock positions respectively. The authors review the scanty literature on the subject and accept the pathogenic theory that this formation originates from a fold or tear in Descemet's membrane. (Illustrations, References.)

Plinio Montalván.

Heidelman, J. M. **Evaluation of Toxoplasma neutralization tests in cases of chorioretinitis.** Arch. of Ophth., 1945, v. 34, July, pp. 28-39.

The purpose of this paper is to report the results of a study of the possible diagnostic significance of Toxoplasma-neutralizing antibodies in determining the cause of chorioretinitis. Toxoplasma is a protozoon of uncertain classification first observed in the North African rodent gondi and named by Nicolle and Manceau in 1909. Since then a large number of animal species, including birds, from various parts of the world have been described as natural hosts for this parasite. Animal toxoplasmosis is considered the source of human infection, although the manner of transmission among animals and from animals to man is unknown. The biologic and immunologic relationship between a human strain and an animal strain of Toxoplasma has been demonstrated.

The occurrence of human toxoplasmosis was first proved in 1939, when Wolf, Cowen, and Paige demonstrated Toxoplasmas at autopsy in the tissues of the central nervous system and the eye of an infant with encephalomyelitis, and transmitted the infection to animals. Fatal cases of toxoplasmic encephalomyelitis, as noted by Wolf and his co-workers, were characterized chiefly by convulsions, internal hydro-

cephalus, cerebral calcification, other neurologic symptoms or signs, and chorioretinitis. The spinal fluid was commonly xanthochromic, with increased protein and mononuclear pleocytosis.

The pathologic changes in the central nervous system, according to the same authors, consisted of areas of inflammation and necrosis, miliary granulomas, hydrocephalús, and calcification. Similar areas of inflammation and necrosis were found in the retina. In the series of 15 cases of toxoplasmic encephalomyelitis reported by Wolfe and his associates, in which the diagnosis was made either clinically or at autopsy, chorioretinitis was present in 10 of the 11 cases in which ophthalmoscopic examination was made. Of 10 patients with chorioetinitis who were studied serologically by Sabin, 9 had neutralizing antibodies.

In the present study, neutralization tests were performed on the serums of 211 persons once or oftener for a total of 269 tests. These serums were obtained from patients with various forms of uveitis or other types of congenital or acquired ocular disease, and from normal persons, including parents of patients with congenital chorioretinitis.

Heidelman obtained strong to moderate neutralization of Toxoplasma with the serum of 63 percent of 27 patients with congenital chorioretinitis, 14 percent of 97 patients with anterior or posterior uveitis, and 10 percent of 58 normal persons other than the parents of infants or children with congenital chorioretinitis. Of nine patients with congenital chorioretinitis and other evidence of toxoplasmosis only five had antibodies. Antibodies were present in six of seven mothers of patients with congenital chorioretinitis. Demonstration of the neutralizing antibody should be considered a factor of moderate diagnostic value only in patients with congenital chorioretinitis. Its absence from serum does not rule out the possibility of toxoplasmic infection.

The neutralizing antibody is of low titer, is thermolabile and shows a tendency to disappear from the blood serum in a few weeks, although it may persist for 15 months or longer, possibly even indefinitely in some cases. Aside from possible instances of familial infection, Toxoplasma-neutralizing antibodies may be demonstrated in 10 to 14 percent of persons without clinical manifestations of toxoplasmosis as the disease is at present understood. It is probable that at least in some of these persons the antibodies are nonspecific. Detailed tables are given and individual cases analyzed. (8 figures, 12 tables, references.)

R. W. Danielson.

Magder, H. **Choroideremia.** Arch. of Ophth., 1945, v. 33, June, pp. 468-470.

Choroideremia is a bilateral condition in which the choroid and the pigment layer of the retina disappear. The periphery of the fundus is involved early in the disease and the macula late, so that the early symptoms are usually night blindness and loss of the peripheral visual field.

The author observed choroideremia in a white man aged 58 years who had noticed a gradual decrease in night vision for ten years. The corrected vision of the right eye was 20/20 and of the left 20/30. The visual field was almost identical in the two eyes and consisted of a central visual area of about 5 to 10 degrees and a narrow peripheral field which formed

a complete ring except for the upper part of the field. Both fundi showed a peculiar greenish-white reflex except at the disc, the macula, and the extreme periphery. Except for the macular area and the extreme periphery the choroid appeared to be entirely absent. A few small collections of pigment were scattered throughout the fundi. The various theories as to the causation of choroideremia are discussed. (4 fundus photographs, references.)

John C. Long.

Yegorov, I. G. **Histopathologic changes in iris nerves in experimental iritis.** Viestnik Oft., 1944, v. 23, pt. 3, p. 37.

The study is based on experimental iritis produced in guinea pigs by application of irritants to the cornea; one eye being cocainized before application of the irritant in some and 46 hours after the application in others. All had iris lesions. Degenerative changes in the iris nerves were found more marked in the eyes subjected to cocainization while regenerative hypertrophic changes were more marked in those not cocainized. Neoformation of bone tissue was noted at the root of the iris and the trabeculum and in the adjacent cornea. The study indicates the reversibility of the process of reactive irritation of nerve fibers in the iris. (Illustrated.) M. Davidson.

8

GLAUCOMA AND OCULAR TENSION

Gasteiger, H. **Vogt's cyclodiathermy puncture.** Klin. M. f. Augenh., 1941, v. 107, July, pp. 52-59.

In the eye department of the Rudolf Hess Hospital the author operated upon 18 eyes with different forms of malignant glaucoma which other operations had failed to cure. Good results were had in 15 eyes, failure in three. (2 tables, references.) F. Nelson.

Kalfa, B. F. **Combating ocular hypertension in war injuries.** Communication 1. Viestnik Oft., 1944, v. 23, pt. 3, p. 25. (See Section 16, Injuries.)

Kayser, B. **The designation of deep excavation of the disc not caused by high tension.** Klin. M. f. Augenh., 1941, v. 106, May, p. 600.

The author opposes the designation, introduced by Elschnig, of such cases as "glaucoma without high tension." Cases with deep excavation but without high intraocular tension or other glaucoma symptoms are not glaucomatous but should be classified as cases of "ectasia without high tension."

F. Nelson.

Promtov, V. A. **Tonometric study of the effect of prozerin on glaucoma.** Viestnik Oft., 1944, v. 23, pt. 2, p. 45.

A 0.5 percent instillation of this Russian drug was found to produce miosis in 18 to 20 minutes and hypotension in one-half to three hours, in 34 cases. In 11 other cases it was ineffective but so were pilocarpine and eserine. M. Davidson.

Raeva, N. V., and Chaikovskaya, M. J. **Intraocular pressure in penetrating cranial wounds.** Viestnik Oft., 1944, v. 23, pt. 3, p. 27.

Both before and after operations on the head, the authors observed 45 cases of penetrating skull injuries in which intraocular pressure was noted three times daily. Slight hypertension, asymmetric hypertension, and abnormal daily fluctuations of tension were noted in most of these cases. The changes

were little influenced by operation and were apparently irreversible (at least during the limited period of these observations), and were attended by frontal headaches. Intraocular tonometry should therefore be a part of the routine examination of head injury cases. M. Davidson.

9

CRYSTALLINE LENS

Kreiker, A. **The "contrapunctor" for fixation of the eye in cataract incision.** Klin. M. f. Augenh., 1941, v. 107, July, p. 26.

The author feels that none of the various types of fixation forceps gives a firm grip on the eye, since they grasp only the loose conjunctiva bulbi or at best a little bit of episcleral tissue. He has therefore devised a new instrument, the "contrapunctor," which consists of a sharp conical point, 0.75 mm. long, with a stop at its base, where it is 0.5 mm. wide. The instrument is mounted on a conventional handle. The point is inserted into the sclera just outside the limbus and a little below the site of counterpuncture with the Graefe knife. During puncture and counterpuncture, slight pressure is exerted with the instrument. The author believes that the operation can be performed more easily and accurately with this instrument than with fixation forceps.

F. Nelson.

Long, J. C., and Danielson, R. W. **Cataract and other congenital defects in infants following rubella in the mother.** Arch. of Ophth., 1945, v. 34, July, pp. 24-27.

The authors briefly review the literature and report six cases that they have personally observed. Five of the infections were acquired in Colorado. In view of the serious nature of the complications noted, various preventive measures have been recommended by different authors, such as deliberate exposure in childhood, convalescent serum, gamma globulin, and therapeutic abortion.

In the six cases reported, the mothers had contracted rubella when from two to six weeks pregnant. Three of the babies had bilateral cataract associated with bilateral microphthalmos. Three of them had unilateral microphthalmos with a distinctive type of cataract in the smaller eye. Fundus lesions were observed in the three eyes of this series in which the fundus could be seen. All six children had cardiac defects. There was one case each of talipes valgus, cryptorchidism, hypospadias, and dacryostenosis. The authors believe that the cataracts, the microphthalmos, the fundus lesions, and the cardiac defects are results of intrauterine damage by rubella. (References.)

R. W. Danielson.

Pflimlin, R. **Vitamin B_1 and its clinical significance in ophthalmology.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 513-537.

A historic review of the research work done for the past fifty years in investigating the significance of vitamins generally and of the vitamin-B complex in particular. Subjects discussed are: toxicity of vitamins and minimum requirements; reasons why additional vitamins are nowadays more needed than a century ago; concentration of vitamins, especially B_1, in the regular modern diet; symptomatologies of deficiency; biologic and chemical methods in determining the content of vitamin B_1 in different substances and organisms; finally the importance of

vitamin B_1 as treatment in general medicine and in ophthalmology. Not suited for a short review. (4 tables, bibliography.) F. Nelson.

Rauh, Walter. **Rachitic bone changes in the supposedly "purely tetanic" nutritional cataract.** Klin. M. f. Augenh., 1941, v. 107, July, pp. 59-67.

According to Bietti, rats on a low calcium and high phosphorus diet, lacking vitamin D, developed tetany with cataract but no rickets. In contrast to Bietti's findings, all of Rauh's animals, as far as they were examined histologically, showed definitely rachitic changes in addition to the cataracts and tetanic symptoms. (10 illustrations, references.) F. Nelson.

Szinegh, Béla. **Advantages and disadvantages of the round pupil in contrast to iridectomy in intracapsular cataract operation.** Klin. M. f. Augenh., 1941, v. 107, July, p. 19.

Two hundred intracapsular cataract operations with iridectomy are compared with an equal number of operations with basal iris-excision. Of those cases with round pupil, complications such as iris prolapse, iritis, and incarceration of iris in the wound occurred in 8 percent more than in the iridectomy cases and made additional operative procedure during the healing period necessary in 5 percent. The end result was however not influenced to any extent. However, such cases required prolonged hospitalization and caused additional anxiety and care. On the other hand, the average visual acuity with round pupil was found a little better, and the cosmetic effect more agreeable. Generally speaking, operation with round pupil and basal excision must be regarded as the method of choice in intracapsular extraction. F. Nelson.

10

RETINA AND VITREOUS

Lobeck, E. **Errors in localizing retinal tears and how to avoid them in operations for retinal detachment.** Klin. M. f. Augenh., 1941, v. 107, July, pp. 36-52.

The author devised a trigonometric scheme for localization of retinal holes to correct for ophthalmoscopic distortion of the opening when the detachment is "high," taking into consideration the necessary mathematic correction of the eye's objective refraction and using the fixed distance between the ora serrata and the limbus (8 mm. at temporal, 7 mm. at nasal side) as well as the more or less constant attachment of the recti and oblique muscles as guides. The latter aid in localization is especially important in operation for macular hole. The horizontal distance between the macula and the rear end of the scleral attachment of the inferior oblique is 4 mm. (1 drawing, 1 table.)

F. Nelson.

Rieken, H. **Objective adaptometry.** Klin. M. f. Augenh., 1941, v. 107, July, p. 1.

In order to eliminate malingering and other psychologic factors in examination of dark adaptation, the author has developed a method for determining adaptation objectively, using optokinetic nystagmus, which is an objective reagent to irritability of the visual apparatus. The fact that not only the cones but also the rods respond to optokinetic stimuli is particularly important, since in dark adaptation the rods play the predominant role. Techni-

cally, optokinetic nystagmus can be registered in several different ways. It is only important to register the start and the cessation of nystagmus, corresponding with appearance and disappearance of the effective light stimulus. F. Nelson.

Rucker, C. W. **Sheathing of the retinal veins in multiple sclerosis.** Jour. Amer. Med. Assoc., 1945, v. 127, April 14, p. 970. (See Amer. Jour. Ophth., 1944, v. 27, Oct., p. 1188.)

Sverdlick, José. **Some observations concerning the structure of the retinal cells.** Arch. de Oft. de Buenos Aires, 1943, v. 18, June, pp. 288-298. (See Amer. Jour. Ophth., 1943, v. 26, Dec., p. 1349.)

Von Sallmann, Ludwig. **Penicillin therapy of infections of the vitreous.** Arch. of Ophth., 1945, v. 33, June, pp. 455-462.

Intravitreal injections of 100 or 10 Oxford units of commercial sodium penicillin in the rabbit eye failed to cause any noticeable damage to the retina, lens, or optic nerve. The lesions caused by 500 units were negligible. Experimental staphylococcic infections in the rabbit vitreous were checked by intravitreal injection of 10 Oxford units of sodium penicillin eight hours after inoculation. The therapeutic effect was increased when 50 to 400 units were used. Traction folds of the retina developed in a number of the beneficially treated eyes, from shrinking strands of organized exudate.

Pneumococcic infections of the vitreous were arrested in the rabbit eye by intravitreal injection of 100 Oxford units of sodium penicillin eight hours after inoculation. The use of 5 Oxford units was often unsatisfactory. Subconjunctival injection of 250 Oxford units of penicillin after intravitreal injection of pneumococci failed to influence the course of the infection.

Three human eyes with severe traumatic endophthalmitis involving the vitreous space were treated by intravitreal injection of penicillin along with application of the drug by iontophoresis. Two of these patients responded favorably despite the advanced stage of the infection and the lapse of more than 48 hours between onset of the infection and the first intravitreal treatment. (3 tables, references.)

John C. Long.

11

OPTIC NERVE AND TOXIC AMBLYOPIAS

Bhaduri, B. N. **Hereditary optic atrophy.** Calcutta Med. Jour., 1945, v. 42, Jan., p. 1.

The author reports two cases of the disease in brothers, one 16, the other 18 years of age. Along with the clinical and laboratory reports, the Wassermann being negative, are given the perimetric studies and notes on an associated deafness in these cases. The visual and aural troubles came on at puberty in both cases. The historic background of the disease and the hereditary aspect of these cases are discussed. Francis M. Crage.

12

VISUAL TRACTS AND CENTERS

Birge, H. L. **Ocular war neuroses.** Arch. of Ophth, 1945, v. 33, June, pp. 440-448.

The importance of psychologic tension in producing syndromes resembling organic disease has become in-

creasingly obvious during war. Ocular neuroses form a rather insignificant group of war neuroses, but they are of importance to the ophthalmologist. War neuroses are not so dependent on abnormal psychic background as are civilian neuroses. The ocular neuroses are not usually disabling. They are often associated with insomnia. Symptoms may include ocular pain, headache, twitching eyelids, spots before the eyes, burning of the eyes, epiphora, photophobia, and occasional distortion of perspective. The dividing line between neuroses and psychosomatic states is not a straight and narrow one. Cases are classified in the latter group when there is evidence of psychoneurosis (frequently an anxiety state) and ophthalmic abnormality on examination.

None of the patients can be treated until after careful and complete ophthalmic examination has been carried out. There can be no routine simplified form of treatment. For patients with the anxiety type of neurosis but normal ocular findings the treatment is one of reassurance by the ophthalmologist. Persistent and recurrent symptoms call for treatment by a psychiatrist. The treatment of hysteria and of the obsessive state is also carried out by the psychiatrist. (1 color-field chart.)

John C. Long.

Bulach. **The ophthalmoplegic syndrome in bulbar encephalitis.** Viestnik Oft., 1944, v. 23, pt. 2, p. 28.

The author records six cases of an unusual and mostly fatal bulbar encephalitis observed in six soldiers wounded in different parts of the body, without any wound complications, and feeling well for days. The course was rapid. Five died in two to ten days, and one recovered. The eye findings were complete ophthalmoplegia and normal fundi and visual acuity. It is believed with Margulis that the virus is concentrated in the basal cistern and thus affects the oculomotor nerves first and foremost.

M. Davidson.

13

EYEBALL AND ORBIT

Filatov, V. P. **Optical correction of a disfiguring prothesis and of unequal size of the eyes.** Viestnik Oft., 1944, v. 23, pt. 3, p. 3.

When a cosmetically satisfactory prothesis cannot be obtained, resort may be had to optical means of overcoming the disfigurement. Convex and concave spheres, cylinders, and prisms, or combinations of them, aid considerably in reducing it. A plus or minus sphere of 8 to 12 D. takes care of a too small and sunken prothesis, or of excessive size and prominence. The other eye is given a plano lens or its needed correction. Cylinders are available for changing the width of the palpebral fissure, a convex cylinder axis horizontal widening it and a minus cylinder axis horizontal narrowing it. The apparent length of the fissure can be affected by cylinder axis vertical. Special grinding of the lens can help in overcoming too deep a prothesis and palpebral folds. The grinding does not have to be as precise as in the ordinary bifocal and trifocal lenses. Varying size of lenses and the use of smoked lenses may also be utilized. The same procedure may be used in blind eyes with disfigurement, such as microphthalmic and buphthalmic eyes; and also to obviate a purely cosmetic surgical procedure.

M. Davidson.

Gukasian, M. G. **A rare case of enophthalmos and symblepharon simulating anophthalmos.** Viestnik Oft., 1944, v. 23, pt. 2, p. 35.

In this case the transition folds were so adherent that an operation for restoring a contracted socket was undertaken; and it was then that the presence of the complete globe was discovered. The fundus was normal and vision was good after correction. M. Davidson.

Kirby, D. B. **Enucleation of the eyeball.** Arch. of Ophth., 1945, v. 34, July, pp. 1-6. (See Amer. Jour. Ophth., 1945, v. 28, Sept., p. 1054.)

Long, J. C., and Danielson, R. W. **Cataract and other congenital defects in infants following rubella in the mother.** Arch. of Ophth., 1945, v. 34, July, pp. 24-27. (See Section 9, Crystalline lens.)

Pokrovsky, A. I. **Some remarks on transplantation of tissue into Tenon's capsule after enucleation.** Viestnik Oft., 1944, v. 23, pt. 2, p. 6.

Medvedev's method of implantation of sclera results in a mobile stump, particularly if modified to use more than one half of the sclera to provide for subsequent contraction of the stump. Attention is however called to the possible danger of sympathetic ophthalmia in view of the difficulty of removing all islands of uveal tissue clinging to the sclera and of the fact that the sclera itself may contain infiltrates with giant cells, such as have been reported in cases of sympathetic ophthalmia. The author therefore prefers Orlov's method of implanting a skin-and-fat flap. No tendency to necrosis has been noted in using the dermal flap. Suturing the muscles to it, as Medvedev does to the sclera, might improve Orlov's method further. M. Davidson.

Tovbin, L. G. **A two-stage method for plastic restoration of the fornices.** Viestnik Oft., 1944, v. 23, pt. 3, p. 30.

In order to prevent interference from hemorrhage during operation, and subsequent contraction of the restored socket, the author first makes the necessary incisions, packs the cavity for three days, and then proceeds with the transplantation. This procedure has given better results than the one-phase operation. M. Davidson.

14

EYELIDS AND LACRIMAL APPARATUS

Babudieri, B., and Bietti, C. B. **Electron microscopic observations on bacteriolysis produced by lysozyme of tears.** Arch. of Ophth., 1945, v. 33, June, pp. 449-454. (See Section 2, Therapeutics and operation.)

Laval, Joseph. **A modified sling operation for correction of ptosis.** Arch. of Ophth., 1945, v. 33, June, pp. 482-483.

The author suggests a modification of the Reese operation using strips of orbicularis muscle and pretarsal fascia as a lid sling. A strip of orbicularis muscle is isolated just above the upper tarsal margin. This strip is divided in the middle, without damaging the nasal and temporal attachments. The ends of the strips are then carried straight upward and anchored to the periosteum. This procedure is recommended in cases in which the levator and the superior rectus muscles are completely paralyzed. (3 drawings, 2 photographs, references.) John C. Long.

Pokrovsky, K. I. **Theoretical and practical problems of tissue transplan-**

tation in plastic operations. Viestnik Oft., 1944, v. 23, pt. 1, p. 3.

In a transplant only a peripheral zone retains its vitality. An intermediate zone partly degenerates, and the central zone wholly degenerates. Regeneration is effected by the surviving elements of the transplant, some elements of the receiving bed, and wandering elements from a distance. The leading role in the process is played by the penetration of newly formed vessels. The process reacts also on the surrounding tissue. The biochemical therapeutic effect of the transplant has been noted by Filatov. It finds its application in trachoma and in the Denig operation. Degenerated fat cells in fat implants are replaced by new fat cells. Scar tissue becomes absorbed in course of time and acquires mobility with the formation of areolar tissue. Pedicled transplants are of course less subject to degenerative changes than free transplants. In the latter, however, these changes can be minimized by proper technique and attention to the following: adequate removal of old scar tissue; satisfactory hemostasis to prevent accumulation of too much blood behind the transplant; avoidance of transplanting into inflamed tissue; avoidance of traumatization of transplant; and avoidance of too liberal size of transplant, which must not exceed 3 by 5 cm.; care in apposition of edges and avoidance of traction. The writer has never observed complete necrosis after free flap implantation under the skin, and warmly recommends it. M. Davidson.

15

TUMORS

Csapody, István. **Choroidal tumor operated on with diathermy puncture.** Klin. M. f. Augenh., 1941, v. 107, July, p. 28.

Though the safest procedure in every case where a malignant melanoma of the uveal tract is found is early enucleation before flooding of the organism with tumor cells sets in, it might be justifiable in certain cases to try to destroy such tumors with diathermy and subsequent perforating cautery where the tumor is still very small. The author reports a very small malignant melanoma directly in the macula. (3 colored fundus pictures.)

F. Nelson.

Felkel, R. K., and Glowatzky, F. **Case of congenital round-cell sarcoma of the orbit.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 582-585.

A baby was born with extreme unilateral proptosis bulbi. A round-cell sarcoma filled the whole orbit. Keratitis from lagophthalmos developed. The tumor grew rapidly. The patient died seven weeks after birth. At post mortem, invasion by the tumor through the ethmoid cells into the frontal lobe was found. There was metastasis into the heart. Only four such cases have previously been reported. (4 illustrations, references.) F. Nelson.

Glowatsky, Franz. **Orbitography in a case of retrobulbar tumor.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 575-582.

A case or orbital tumor (Hippel's gliomatosis) in which for diagnostic reasons a retrobulbar injection with 6 c.c. of thorotrast was made. Nausea and vomiting followed two hours later. All of the injected material rather rapidly infiltrated the lids and the subconjunctival space, none remaining in the orbit. The tumor was removed by

Krönlein operation, with resection of the optic nerve. Ptosis resulted. The subconjunctival and subcutaneous deposits of thorotrast made a plastic operation necessary. Thiel's orbitography with thorotrast is apparently not applicable where a tumor fills the whole orbit. (6 illustrations, references.)

F. Nelson.

Martin, H., and Reese, A. B. **Treatment of bilateral retinoblastoma (retinal glioma) surgically and by irradiation.** Arch. of Ophth., 1945, v. 33, June, pp. 429-439.

Removal of the eye with the more advanced involvement is combined with the irradiation of the posterior half of the other eye by a special technique. Twenty-four cases of bilateral retinoblastoma have been treated in this manner. Up to 1939, nine cases had been treated, with the following five-year end results: two deaths due to retinoblastoma; one death from rhabdomyosarcoma arising in the temporal muscle eight years after treatment for retinoblastoma (patient had good vision in treated eye for over seven years); two patients living without recurrence and with vision; four patients living without recurrence but blind. Of 14 patients treated during the last five years, three have died or have recurrences, three are blind but appear to be free of disease, and eight have vision and are free of tumor.

Retinoblastoma is a fairly radiosensitive tumor and could be easily destroyed were it not for the fact that the ciliary body, iris, and lens are also very radiosensitive. The anterior segment of the eye is so radiosensitive that the eye would be destroyed by even a part of the dose necessary to destroy the retinoblastoma. Very exact technique has been evolved to permit the treatment of the posterior segment only. Two special cylinders have been designed to permit application of X ray through a temporal portal and through an oblique portal from the opposite side of the bridge of the nose. Treatment is given in divided doses three times a week for several months until a total of 8,000 r x 2 has been administered.

Retinoblastoma is always a congenital tumor and the authors state that it is bilateral in the majority of instances. They stress the importance of a detailed examination of both eyes under general anesthesia and ideal conditions in all suspected cases. Early diagnosis and treatment are important. The prognosis is not favorable if the tumor occupies more than one quadrant of the fundus. Tumors that have invaded the choroid are uncontrollable by radiation and require enucleation. Complications of irradiation have included glaucoma, cataract, phthisis bulbi, and late vascular changes. These complications can be avoided only by rigid attention to technique. (2 tables, 4 figures.)

John C. Long.

Schöpfer. **Lymphangioma cavernosum of conjunctiva and buccal mucous membrane.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 592-595.

A rare case of multiple lymphangioma in the conjunctiva and in the mucous membrane of the check and palate, in a 23-year-old male. The diagnosis could be established clinically without doubt, because of the typical appearance of the tumors. Biopsy was unnecessary and would have been inadvisable because of poor healing tendency after excision. (3 illustrations, references.)

F. Nelson.

Travi, O. C., and Sidelnick, A. E. **Bothriomycoma of the conjunctiva.** Arch. de Oft. de Buenos Aires, 1943, v. 18, May, pp. 238-244.

A woman 62 years old presented a small pediculated tumor of the conjunctiva at the outer canthus. The tumor was fleshy and grayish-white in color, having appeared 15 days prior to the first examination. Four months after its removal the lesion recurred, showing all the characteristics of the original tumor. The histopathologic diagnosis was telangiectatic granuloma, characterized by newly-formed vascular spaces lined with endothelium, with a stroma formed by embryonic connective tissue infiltrated by inflammatory cells. Due to its similarity to the lesions of bothriomyces in the horse, this type of tumor has received the name of bothriomycoma, which is a misnomer because the growth is a cutaneous granuloma produced by a microörganism similar to the staphylococcus aureus. The condition is extremely rare in the eye, only two cases having been previously reported in the literature. A brief description of the disease is presented. (5 illustrations, including 3 photomicrographs, bibliography.)

Plinio Montalván.

16

INJURIES

Archangelsky, P. F. **Corneal trephining for access to the anterior chamber in eye injuries.** Viestnik Oft., 1944, v. 23, pt. 2, p. 23.

In ten cases the trephine was used in removal of nonmagnetic foreign bodies from the anterior chamber, iris, or lens. The method has also been found useful for removal of cataract in absence of anterior chamber.

M. Davidson.

Baltin, M. M. **The mechanism of secondary optic-nerve changes in orbital war-injuries.** Viestnik Oft., 1944, v. 23, pt. 1, p. 9.

The thesis of Popov that external orbital-wall injuries are most frequently responsible for fissures of the optic foramina, and that the optic-nerve lesions are reflex in nature, is discussed, and it is pointed out that it is usually the orbital-roof fissures that lead to the optic foramen indirectly, and that fractures of the outer orbital wall and of the zygoma, for reasons of topographic anatomy, rarely give rise to indirect fractures of the optic foramina. The interposition of the sphenoidal fissure and the sutures connecting the zygoma with the other bones entering into the formation of the orbit prevent involvement of the foramina. Optic-foramina fractures, as found by X rays, take part in basal fractures, the roof of the orbit being a part of the base of the skull. The characteristics of an optic-foramen fracture are: immediate loss of vision, loss of direct pupillary reaction, and normal fundus at first but paleness of the optic nerve-head a week later. Popov's cases are not characteristic enough to justify his thesis. Only rarely is hyperemia of disc observed. There is no inflammatory reaction, and no callus has been observed by the writer in the optic canal. X-raying the optic foramen is very difficult, The Reese method is not accurate. Greater precision is achieved by the Baltin method described elsewhere. An X ray of the optic foramen alone without an X ray of the base of the skull is not sufficient.

M. Davidson.

Bochever, E. M. **Nonmagnetic foreign bodies in the eye.** Viestnik Oft. 1944, v. 23, pt. 2, p. 25.

The author's experience leads him to the conclusion that when these are in the posterior segment they are better left alone. Successful extraction of two led later to enucleation, while two other cases in which they were left alone fared better. Multiple foreign bodies in the cornea are also best left alone unless superficial. Glass foreign bodies tend to extrude themselves. Removal is favored when they are in the anterior chamber or iris. When in the lens they should be removed together with the lens. M. Davidson.

Braunstein, N. E. **The therapy of war injuries of the eyes.** Viestnik Oft., 1944, v. 23, pt. 1, p. 13.

Two years experience in the treatment of perforating eye injuries reaching base hospitals two weeks to several months after injury, indicates need for revision of our theory of the traumatic process in the eye, and of our therapeutic practices. During the first two years of the war, in the absence of uniform instructions for the treatment of eye injuries, and of an adequate supply of drugs, treatment at the evacuation hospitals lacked standards, had no clear objectives, and was often limited to first aid and subsequent trust in nature.

Our old concept of the role of exogenous infection in traumatic inflammations of the eye is no longer tenable. We must recognize a reactive, or aseptic, or regenerative inflammation in wounds beyond the already recognized processes in the case of copper and other metals. Even in the presence of microbes, some uveitises represent an aseptic inflammatory process conditioned by local or general allergy, the presence of protein products, trophic disturbances, disturbed circulation of fluids, and disturbed topographic anatomy of the eye. In many cases bacteriology is negative. Limitation of the inflammation to the eye without involvement of any other part of the body argues against the process being an infection. Its chronicity also argues to a like effect. Of a hundred eyes enucleated after war injuries, and studied by the writer, the presence of an infection was established in only 16. Evidence of sympathetic ophthalmia was found in only three additional cases. In 81 there was no evidence of purulent infection. These aseptic cases lead to blindness not because of infection but because of accelerated processes of pathologic organization, namely adhesions and cicatricial bands and their contractions. The author therefore proposes to recognize three morphologically distinct types of inflammation in eye injuries:

(1) A reactive aseptic uveitis characterized by exudation, and strictly localized in the uveal tract without involvement of vitreous and retina. The tendency toward organization is marked. (2) Sympathetic inflammation of a proliferative character, with formation of foci of the type of infectious granuloma, having specific cellular elements (epithelioid and giant cells). It is possible that here we deal with endogenous factors, namely sensitivity to specific allergens. (3) Infectious purulent-exudative inflammation, or purulent endophthalmitis, localized in the ocular cavity and retina and not involving the choroid. The cellular elements are pus cells. Active therapy consisting in removal of all crushed tissues, careful closure of wounds, and early removal of intraocular foreign bodies is primarily indicated.

M. Davidson.

Dashevskii, A. I. **Formation of the inner layer in a one-stage lid reconstruction for complete or partial absence and anophthalmos.** Viestnik Oft., 1944, v. 23, pt. 1, p. 6.

The problem of creating a new socket and rebuilding a new lid, either upper or lower, can be solved in a one-stage operation, without recourse to free grafting, by utilization of locally available tissue in the form of skin and conjunctiva fused together. The first step consists in outlining enough of the mass to provide for the inner layer of the lid and restoration of the socket. This is undermined as far inward as possible, almost to the center of the conjunctival sac. The previously selected prothesis is put in as a guide in determining the site of the fornix, either upper or lower, and through this two mattress sutures are inserted, to emerge either 5 to 6 mm. below the original incision (for the lower) or under the eyebrow (for the upper lid). The prothesis is again put in, and is given the right position by adjusting the sutures. The sutures are tied at the end of the operation. Next a Fricke flap is prepared to take care of the defect and formation of the outer layer of the lid. This must be twice the width of the flap for the inner layer. The outer and inner layers are sutured, beginning internally to form the lid border. The place of the Fricke flap is closed by subcutaneous sutures. The mattress sutures are now tied under guidance by the position of the prothesis. The stability of the inner layer was demonstrated in a case in which unfortunately the outer layer was lost from an accident three days after the operation. The cosmetic effect includes a deep socket with well formed fornices. (Illustrated.)

M. Davidson.

Drinker, Philip. **Measurement and prevention of eye flash.** Sight-Saving Review, 1944, v. 14, p. 166.

The author's investigations refer to ultraviolet light such as that to which workers in welding, cutting, burning, and even shrinking are exposed. Brief references are made to protective glasses used, distance and exposure, and lightmeter measurements. Real evidence of eye burn in unprotected eyes exposed to typical shipyard welding-arcs came after 80 minutes at 100 feet. No evidence of burn was present before 20 minutes at 50 feet.

The screening effect of ordinary glass on ultraviolet, in all types of eyeglasses and safety glasses, is so good that eye flash is virtually nonexistent among wearers of glasses. Hardened-lens safety goggles with side eyeshields are considered adequate protection for most shipyard workers. All goggles worn near welding operations should be equipped with side guards for protection against foreign bodies.

Francis M. Crage.

Fanta, H. **Contribution to clinical picture of traumatic detachment of the vitreous body.** Klin. M. f. Augenh., 1941, v. 107, July, p. 80.

Report of two cases of traumatic detachment of the vitreous body, one caused by indirect trauma (motorcycle accident), the other by direct trauma (eye hit by piece of wood). Such cases are always predisposed to retinal detachment.

F. Nelson.

Gálvez Bunge and Moraschi. **Intraocular foreign bodies.** Arch. de Oft. de Buenos Aires, 1943, v. 18, May, pp. 271-274.

The authors report three cases. Two of the foreign bodies were nonmagnetic.

The three had been observed 1, 2, and 17 years respectively after the injury, without any evidence of uveal reaction or intraocular inflammation. In view of the tolerance shown by these eyes the authors do not advocate surgical interference in recent cases of nonmagnetic foreign body or in any case in which the time elapsed after the injury is long, the vision is good, and there is no evidence of intraocular inflammation. (Illustrated.)

Plinio Montalván.

Goldenberg, A. Z. **The treatment of eye burns with Albucid.** Viestnik Oft., 1944, v. 23, pt. 1, p. 42.

Very encouraging results are reported from use of a 30-percent Albucid ointment in 45 cases (half of them severe) including chemical and thermal burns and one due to an explosion.

M. Davidson.

Kalfa, S. F. **Combating ocular hypertension in war injuries.** Communication I. Viestnik Oft., 1944, v. 23, pt. 3, p. 25.

The role of vasomotor innervation in the pathogenesis of traumatic hypertension is discussed. As a reaction to injury the tension rises after one or two minutes and reaches its maximum in 15 to 20 minutes. With perforating injuries this phenomenon does not manifest itself until after closure of the wound. Pain is not a paramount factor in this reactive hypertony, since it follows corneal much less than iris injuries. Two phases may be distinguished; an active hyperemia first and a passive hyperemia later. This reactive hypertension may be controlled by blocking the local autonomic nervous system. Prevention of hypertension may be achieved by use of cocaine locally in contused eyes. Its control requires retrobulbar injections of novocaine. Interference with circulation and permanent lowering of visual acuity, without visible anatomic change in the fundus, may be observed after four hours of hypertension and is inevitable after 24 hours of it. M. Davidson.

Katznelson, A. V. **Gunshot injuries of the lids and handling in the field and front stations.** Viestnik Oft., 1944, v. 23, pt. 2, p. 7.

In a review summary of the handling of these injuries it is emphasized that every lid wound may be accompanied by more serious deeper lesions in orbit and sinuses and cranial cavity, and that these lesions may be overlooked if the cases are not carefully examined.

M. Davidson.

Klachko, M. L. **The eye findings in gunshot basal skull fractures.** Viestnik Oft., 1944, v. 23, pt. 2, p. 13.

The enormous majority of basal fractures succumb at the front, and few reach base hospitals. Of the 935 cases of craniocerebral injury reaching base hospitals only 16 were diagnosed as such and four verified at autopsy. Most of these resulted from temporal, frontal, maxillary and orbital injuries. The weakest spot is the roof of the orbit. A hematoma of lids, sclera, and orbit indicates an anterior fossa fracture; hematoma of nose, ear, mouth, and pharynx points to fracture of the middle fossa; that of the tip of the mastoid indicates a posterior fossa fracture. Macewen's sign of mydriasis on the side of the hemorrhage has been helpful. But on the whole the topical diagnostic value of the proceding signs, including cranial-nerve involvement, is relative. The only absolute sign is escape of cerebral contents. Involvement

of the optic nerve acquires more value in the light of this war's experience, but the author does not believe the diagnosis of a basal fracture can be made from ocular findings alone.

M. Davidson.

Kolychev, N. **Lead as intraocular foreign body in war injuries.** Viestnik Oft., 1944, v. 23, pt. 1, p. 31.

In the last war 3.3-percent of all intraocular foreign bodies were lead, according to Fleischer. Observation of two such cases in this war indicates their innocuousness. The diagnosis was facilitated by careful slitlamp examination, which showed a scattered white powdery substance in lids and globe. This was due to the fact that the lead bullets had hit something hard first and had broken up into minute particles which became further pulverized on striking the lids and globe and on penetration of the eyeball. M. Davidson.

Krasnov, M. L. **Diascleral extraction of nonmagnetic foreign bodies from the eye.** Viestnik Oft., 1944, v. 23, pt. 3, p. 17.

The author has operated on five cases of intraocular copper, and has removed four foreign bodies. Scleral section in four cases was opposite the pars plana.

M. Davidson.

Krol, A. G. **Enucleation in war eye injuries.** Viestnik Oft., 1944, v. 23, pt. 2, p. 31.

Having observed many infections after enucleations at the front, the author advocates dispensing with conjunctival sutures in such circumstances. The editor however remarks that in base hospitals suturing is more rational. M. Davidson.

Krol, A. G. **Tips for extraction of foreign bodies with the giant electromagnet by the posterior route.** Viestnik Oft., 1944, v. 23, pt. 3, p. 45.

Three tips are described which are screwed into regular tip for this purpose. The pull is decreased somewhat, but this is overcome by previous magnetization of the foreign body with the regular tip, and by the closer approach afforded to it. M. Davidson.

Poliak, B. L., and Chutko, M. B. **Magnet extractions at the front.** Viestnik Oft., 1944, v. 23, pt. 3, p. 8.

Magnet operations are an important function of the military surgeon. In the recent war 55 to 70 percent of all eye injuries were perforating, with 25 to 30 percent harboring intraocular foreign bodies of which two thirds were magnetic. Provision should be made for a possible breakdown of the giant magnet, by providing stations close to the front with hand magnets. To meet such emergencies several ophthalmologists themselves built such magnets, powered by storage batteries and dry cells. Golovin extracted 122 out of 144 foreign bodies with his, and others have extracted 90 to 94 percent of foreign bodies with hand magnets. Constant magnets have not given good results. In the matter of therapy the anterior route has no place in war injuries, since the particles are small, twisted, and mainly in the posterior segment. Use of the anterior route is limited to foreign bodies in the anterior chamber, iris, and lens. M. Davidson.

Radzikhovskii, B. L. **A new X-ray geometric method for differential diagnosis and localization of intraocular foreign bodies.** Viestnik Oft., 1944, v. 23, pt. 1, p. 19.

The indicator employed is an aluminum four-branch prothesis, forming a hemisphere of 24-mm. radius, provided with lead markers, one at the pole, one in the center, and one at each end of the branches. The prothesis is fixed to the globe by an adjustable head-strap. Antero-posterior and lateral views are taken, using special means for fixation. For the monocular patient a hole in the prothesis near the pole provides for fixation. (Illustrated.) M. Davidson.

Raeva, N. V., and Chaikovskaya, M. J. **Intraocular pressure in penetrating cranial wounds.** Viestnik Oft., 1944, v. 23, pt. 3, p. 27. (See Section 8, Glaucoma and ocular tension.)

Rodigina, A. M. **Principles underlying treatment of the war-blind.** Viestnik Oft., 1944, v. 23, pt. 3, p. 4.

The treatment of the war-blind needs revision in the light of experience indicating the possibility of saving apparently hopeless eyes by persistence. Sixty percent of all eye injuries are perforating injuries and are complicated by iridocyclitis. In the first phase of the iridocyclitis, lasting about a month, practically nothing can be done except to use mydriatics and analgesics and to keep the wound clean. During the second phase, lasting 2 or 3 months, hypertension may have to be met as an emergency but nothing more can be done. After this the eye is quiet and some vision may return. In this stage osmotherapy, or hypertonic solutions—principally salt and at times glucose—combined with dry heat locally have been found to promote absorption of exudates and to reduce inflammation very markedly. What can be achieved is illustrated by two cases. One patient was a one-eyed blind soldier in whom the intensive work resulted in vision of 20/300 and return to work. The other was a blind soldier in whom 20/70 and 20/50 were secured.

M. Davidson.

Rosenblum, M. E. **The removal of nonmagnetic foreign bodies from the posterior segment.** Viestnik Oft., 1944, v. 23, pt. 3, p. 12.

Already before the war the incidence of nonmagnetic foreign bodies in the eye had considerably increased. In war injuries their incidence is between 35 and 40 percent. Most of them are of copper, and the author is unqualifiedly in favor of their removal. He makes a preliminary diathermocoagulation for more precise localization when the foreign body is visible ophthalmoscopically. The magnet is applied, to make sure of the foreign body being nonmagnetic. The choroid is not cut but is carefully opened up with a spatula. Fifteen cases are reported, with nine successful removals. No case was made worse by the attempt. M. Davidson.

Shershevskaja, O. I. **Retinal-vessel reactions in cranial war injuries.** Viestnik Oft., 1944, v. 23, pt. 2, p. 16.

On the basis of 610 cases of cranial injury observed, the author believes with Margulis-Kolen that the retinal vessels reflect both closed and open injuries. Aside from papilledema there have been observed widening of veins and abnormal venous reflexes, capillary hyperemia of the disc without blurring of margins, at times narrowing of arteries, widening of their reflex, arteriovenous compression, irregular caliber of veins, tortuosity of macular veins, mild peripapillary edema, increased branching of vascular network, occasional white streaks along vessels, and

hemorrhages. The findings are, in other words, those of the fundus in the hypertensive patient. They have been observed 2 or 3 months up to a year after injury, in remote base hospitals. No case of neuritis or of central vein thrombosis was observed. Blood pressure was normal in all. Among the visual-field changes were absolute and relative central scotomata and peripheral concentric contractions. Occasionally, faint macular pigment changes were noted. Dynamometric studies of the retinal vessels are now in progress on these cases. In conclusion, the author notes that the fundus changes are similar to those of the hypertonic fundus, that these reflect the vasomotor reactions of the cerebral vessels to injury, that retinal hypertony need not be accompanied by general vascular hypertony, but runs parallel with intracranial hypertension, and that these changes persist longer than other signs of cerebral injury and are therefore important aids in retrospective diagnosis of such injuries.

M. Davidson.

Smelanskii, R. I., and Treister, G. N. **Clinical and X ray features of gunshot injuries of the orbit.** Viestnik Oft., 1944, v. 23, pt. 2, p. 32.

The orbit, in which neurosurgeons, ophthalmologists, and rhinologists are all interested, tends to become clinically a No-Man's land. The topography of the orbit is also unfavorable for the radiologist. Hence special techniques are necessary in its X-ray exploration. The "kiss position" is considered the only adequate one, and the frontonasal position is rejected as unsatisfactory. In addition to a lateral view, use of the narrow tube is necessary for special details. At the writers' neurosurgical service, handling stretcher cases exclusively, 500 cases, constituting 40.2 percent of all eye-injury cases, were found by X ray to have orbital fractures. These orbital fractures constituted 24.6 percent of all skull fractures found, and 90 percent of them were combined and involved neighboring cavities, and 2.5 percent were bilateral. The majority were fractures of the lower outer orbital wall. Almost all cases showed diastasis of the frontomalar sutures, at times with considerable separation and displacement of fragments. The most difficult wall to X-ray is the inner orbital wall, and while only 6.9 percent showed lamina-papyracea fracture, clinically there were more of them. Few optic-foramen fractures were observed, and this is explained by the supposition that the optic foramen is more often involved indirectly than in direct orbital injury. Because of the seriousness of these orbital injuries it is advocated that they be concentrated in special sections where they may have the benefit of team work by ophthalmologist, neurosurgeon, rhinologist, and stomatologist. M. Davidson.

Strakov, V. P., and Bochever, E. M. **Eye contusions in orbital gunshot wounds.** Viestnik Oft., 1944, v. 23, pt. 2, p. 3.

The authors believe that many of the changes in the globe can be explained on the basis of disturbance of the autonomic innervation, with vessel spasm, subsequent increased permeability of vessels, disturbed secretion, and lowered intraocular pressure. A review of 300 cases of orbital injury with globe apparently uninjured showed 43.3 percent of combined orbital fractures, and 40 percent of foreign body in the orbit. In 30 percent the fundi showed Berlin's

edema lasting three to four days but disappearing without a trace. There were 4 percent with retinal detachment. Vitreous hemorrhages seemed to be mainly associated with zygomatic fractures, this being explained by the greater force required to produce them. Many cases suffered loss of vision without any lesions in the fundi, and 70 percent of the cases retained less than 20/200 visual acuity. Many of them were accompanied by evidence of craniocerebral trauma, and it is emphasized that all orbital injuries should be handled and treated as such and not as if they were merely local and isolated cases of injury. M. Davidson

Tikhomirov, P. E. **The peculiarities of intraocular foreign bodies in the present war and their proper handling.** Viestnik Oft., 1944, v. 23, pt. 2, p. 10.

Sixteen percent of all perforating eye injuries have intraocular foreign bodies, and 70 percent of all eye injuries are perforating injuries. Many of the injuries result in multiple foreign bodies while 67 percent are in the posterior segment; 21 percent in the ciliary body; 10 percent in the anterior chamber, iris and lens; 2 percent are double perforations; 75 percent are in the lower hemisphere, 13 percent in the upper and 12 percent in the horizontal meridian. Most of the foreign bodies are small, the largest being 10 mm. The injuries with the larger foreign bodies cause loss of the eye and do not reach the base hospitals. 26 percent of them are nonmagnetic. In addition, 23 percent could not be extracted and were presumed to be nonmagnetic. Of those eyes from which foreign bodies were extracted 11 percent later had to be enucleated. The author believes that nonmagnetic foreign bodies are better left alone, since the end results of their extraction are still not known. He is also in favor of not attempting extraction in the one-eyed or when old and encapsulated. M. Davidson.

Whitney, L. H. **Industrial first aid—eye injuries.** Sight-Saving Review, 1944, v. 14, Winter, p. 183.

Attempts at treatment by employers, and delay by the employee in obtaining treatment for apparently trivial accidents, are two mistakes which need correction. The author speaks of the launching of an educational program intended to reduce accidents. Nurses are trained to perform efficient first-aid work. Major cases are referred to an outside ophthalmologist. Methods used in treating the more common injuries are described. Francis M. Crage.

17

SYSTEMIC DISEASES AND PARASITES

Edgerton, A. E. **Herpes zoster ophthalmicus.** Arch. of Ophth., 1945, v. 34, July, pp. 40-62, and Aug., pp. 114-153. (14½ page bibliography.) (See Amer. Jour. Ophth., 1944, v. 27, Jan., p. 100.)

Ridley, Harold. **Ocular onchocerciasis.** Brit. Jour. Ophth., 1945, Monograph Supplement X, 55 pp. (27 figures, 3 color plates, 1 table, bibliography.) (See editorial, Amer. Jour. Ophth., 1945, v. 28, Nov., p. 1269.)

Srivastava, Lal. **A case of filariasis of the eye.** Indian Med. Gaz., 1945, v. 80, Feb., p. 94.

Two filarial worms were seen moving freely in the region of the macula in a healthy female aged 26 years. The eye was otherwise healthy. Two intravenous injections of Soamin brought

no improvement. In discussion, Somerset advised removal of the worms through a corneal incision if and when they reached the anterior chamber.

Francis M. Crage.

18

HYGIENE, SOCIOLOGY, EDUCATION, AND HISTORY

Fanta, H. **Statistics as to the blind and partially blind.** Klin. M. f. Augenh., 1941, v. 106, May, pp. 547-556.

The patients were examined at the II University Eye Clinic in Vienna during the year 1939. The statistics include all the cases during 1939 with vision less than 6/60. As blind or practically blind were regarded cases with vision 1/60 or less. Among 6,250 eyes examined, 1,171 had vision less than 6/60. After attempts to improve vision 78 cases remained binocularly blind, 464 cases monocularly blind. These 542 cases included 263 female, 279 male. The highest number of cases of blindness was caused by cataract: 325 cases, of which operation was refused in 71. The next largest group (210) had diseases of the cornea; 157, pathology in the fundus; 91, glaucoma; 67, retinal detachment. Other pathologic conditions are tabulated. There were 78 blind or practically blind with amblyopia ex anopsia. These were mostly strabismus cases which had not received any treatment before the fifth year of life (at an age where treatment usually yields no or very limited therapeutic results). The author lays stress on the fact that such patients are referred much too late by many general practitioners, as well as on the necessity of better education of physicians as well as parents, teachers, and kindergarten attendants. (1 table.)

F. Nelson.

Lancaster, W. B. **Eye exercises—do they do any good? Do they do any harm?** Sight-Saving Review, 1944, v. 14, Winter, p. 139.

The author analyzes vision as part physical wherein the retina and the ocular muscles including those of accommodation act together, and which he calls sensation; the other part mental, which he calls perceptive. Speed of reading has been shown to be improved by practice. Improvement in color blindness by the "light and filter" treatment has been found to be erroneous. The condition is congenital and incurable. Myopes who improve are probably "false" myopes whose accommodation becomes relaxed or who see "better" through their blur, but whose visual acuity is not really improved. Orthoptic exercises have been very successful in many instances of disturbances of motility where the nerve part of the neuromuscular mechanism was faulty, and not the muscles as had been previously thought.

Mention is made of extravagant claims of some of the methods and the possible harm in cases such as cancer and glaucoma where the proper treatment is neglected.

Francis M. Crage.

NEWS ITEMS

Edited by Dr. Donald J. Lyle
904 Carew Tower, Cincinnati 2

News items should reach the editor by the twelfth of the month.

Miscellaneous

Due to transportation difficulties the examination of the American Board of Ophthalmology, originally scheduled for Los Angeles, January 28th to 31st has been changed to San Francisco, June 22d to 25th, inclusive, 1946.

1946 examinations: *Chicago,* January 18th through 22d; *New York,* April, approximately 10th to 13th; *San Francisco,* June 22d to 25th; *Chicago,* October 9th through 12th.

Urgent: All candidates are required to fill out a new blank regardless of previous correspondence and arrangement.

Medical Officers should notify the Secretary, Dr. S. Judd Beach, Cape Cottage, Maine, promptly of all changes of address so that communications may reach you promptly.

List of Surgery: A new ruling requires that candidates mail their lists of surgery to the Board office at least 60 days prior to their examination. All new applicants are now required to send list with application.

By the will of the late Dr. Paul L. Sartain, of Philadelphia, the sum of $5,000 was bequeathed to the College of Physicians of Philadelphia, in trust for the creation of a "Library of Ophthalmological Illustrations." The trustee is to acquire by purchase or through gifts to the college, drawings and paintings delineating faithfully and accurately, as well as artistically, the ocular structures. High-class reproductions of illustrations in the ophthalmologic field, as by photographs or other methods may be accepted, and photographs, lantern slides, and films of any kind for projection on the screen may be selected. All acceptable specimens are to be properly mounted and catalogued and so arranged as to be readily consulted and used by the Fellows of the college and other accredited visitors. No efforts should be spared for the careful handling and preservation of such a library.

In addition, Dr. Sartain provided that "if at any time there should be a surplus of income from the Fund, such surplus may be used for the preparation of illustrations of interesting cases submitted by those unable to bear the expense of their delineation, but such illustrations should become the property of the College and be included in the Sartain Library."

The Sanford R. Gifford Memorial Lecture for 1946 will be delivered before the Chicago Ophthalmological Society on January 21st, by Dr. Jonas Friedenwald. His subject will be "Disease processes versus disease pictures in the interpretation of retinal vascular lesions."

The ninth annual William Thornwall Davis Postgraduate Course in ocular surgery, pathology, and orthoptics will be held Monday, February 4, through Saturday, February 9, 1946, at the George Washington University School of Medicine, Washington, D.C. This course will be given by the resident staff of the Department of Ophthalmology and the Army Institute of Pathology and will be limited to 30 registrants. An outline of the course follows: Surgery: 10 hours of ocular surgery on animal eyes; Pathology: 15 hours of practical ocular pathology with microscopes, lantern slides, and demonstrations; Orthoptics: 12 hours of orthoptics with case demonstrations, instruments, and practical and didactic instruction.

The fee is $200.00. For further details write to the secretary, Miss Mary E. Kramer, 927 17th Street, N.W., Washington 6, D.C.

The fifteenth annual Spring Clinical Conference of the Dallas Southern Clinical Society will be held from March 18th to 21st. The entire conference will be held in the Hotel Adolphus and will consist of general assemblies, afternoon clinics, round-table luncheons, clinical-pathologic conferences, evening symposia, postgraduate lecturers, motion pictures, and technical exhibits. Among the guest lecturers will be Dr. Edmund B. Spaeth of Philadelphia.

There is an all-inclusive registration fee of $10.00. For information or advance registration write to the Secretary, 433 Medical Arts Building, Dallas 1, Texas.

There is now available a third printing of Alfred Bielschowsky's "Lectures on motor anomalies." Books are on sale at Dartmouth College Publications, Hanover, New Hampshire, at $1.50 per copy, postpaid.

A brief course in "Ocular motility" was held at the Episcopal Eye, Ear, and Throat Hospital, Washington, D.C., from October 29th to December 13th. The course was primarily intended for the residents of the Hospital but was available to local and service ophthalmologists and technical assistants in ophthalmic offices. The instructors for the course were Alice McPhail, R.N., Dr. Frank Costenbader, Dr. Ernest Sheppard, and Dr. Richard Wilkinson.

Societies

The Milwaukee Oto-Ophthalmic Society held its first regular meeting on October 23d at the Milwaukee Athletic Club. The scientific program consisted of the following presentations: "Analysis of poliomyelitis cases at South View Hospital—Effect of tonsillectomies" by Dr. Max J. Fox, and "German measles, a factor in congenital deafness and cataracts" by Drs. A. B. Schwartz and Meyer S. Fox.

The officers of the Washington, D.C., Ophthalmological Society for the 1945-1946 season are: Dr. John R. Lloyd, president; Dr. Richard W. Wilkinson, vice-president; and Dr. Edward J. Cummings, secretary-treasurer. The dates of the meetings for this season are November 5th, January 7th, March 4th, and May 6th.

At the meeting of the Southern Medical Association, which was held in Cincinnati, November 12-15, 1945, the following papers were presented to the Section on Ophthalmology and Otolaryngology: "The use of the Berman locator in removing magnetic intraocular foreign bodies" by Dr. B. Y. Alvis, Saint Louis, discussed by Dr. George M. Haik, New Orleans; and "Surgery of war deformities of the eyelids" by Capt. Alston Callahan (MC), Atlanta, discussed by Dr. Harvey B. Searcy, Tuscaloosa, Alabama.

Dr. Avery D. Prangen, Rochester, Minnesota, was among the guest lecturers at the fifteenth annual clinical conference of the Oklahoma Clinical Society which was held in Oklahoma City from November 26th to 29th.

At the thirteenth annual assembly of the Omaha Mid-West Clinical Society, which was held from October 22d to 26th, Dr. Henry P. Wagener spoke on "Loss of vision in patients with hypertensive disease and with diabetes."

The officers of the Minnesota Academy of Ophthalmology and Oto-Laryngology for the year 1945-1946 are: Dr. Karl C. Wold, president; Dr. T. R. Fritsche, first vice-president; Dr. C. L. Oppegaard, second vice-president; Dr. William A. Kennedy, secretary-treasurer; and Drs. M. C. Pfunder, C. E. Stafford, and J. J. Hochfilzer, council members.

The forty-ninth meeting of the Reading Eye, Ear, Nose, and Throat Society was a joint meeting with the Berks County Medical Society on November 14, 1945. Dr. Lewis R. Wolf, of Temple University, Department of Ophthalmology, discussed "Retinal arteriolar sclerosis." Dr. John Lansbury, associate professor, Department of Internal Medicine, Temple University, spoke on "The medical management of hypertension." Dr. W. E. Burnett, professor of surgery, Temple University, addressed the group on "The Surgical management of hypertension."

Personals

The University of Illinois College of Medicine has announced the promotion of the following faculty members: Dr. Hiram J. Smith, to associate professor of ophthalmology; Dr. Carl Apple, to associate professor of ophthalmology; and Dr. Louis Bothman, to clinical professor of ophthalmology.

Dr. Albert D. Ruedemann, Cleveland, was among the speakers at the instructional course given by the American College of Allergists. He spoke on "Ocular allergy."

According to a recent release from the Office of the Surgeon General, Col. Frederic H. Thorne (MC), Commanding Officer of Old Farms Convalescent Hospital, Avon, Connecticut, has retired from the Army after 29 years of service with the Army Medical Department. Having spent the greater part of his military career in the field of ophthalmology, Colonel Thorne was appointed head of the Army's rehabilitation center for the blind at Avon, Connecticut, in 1944, and has helped develop and extend the blind training program there, pioneering in new training techniques.

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